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Knowledge role for start ups in business incubators

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Abstract.

The impact of the knowledge economy and management on SMEs is major and multidimensional. This is particular relevant for start-ups, small companies founded by entrepreneurs which has to cope with challenges (and opportunities) of the new economy without having many tools to deal with. From knowledge management point of view, the major challenges for new entrepreneurs' lies in when and how to build flexibility, environment-sensing capabilities and an internal capacity to generate, share and use knowledge and innovation.

Whilst the benefits of focusing on knowledge as a strategic organizational development driver is accepted, the management of the process of doing so is particularly difficult in most new SMEs. This is due to lack of management processes knowledge and/or abilities, weak organizational culture and a lack of adequate skills within the business to research, develop and manage innovative ideas.

Start-ups can manage this process of developing through innovation in a number of ways: strategic alliances, constant and consistent education and training of the staff, implementing knowledge management tools or setting up a business incubator.

One approach to this is via business incubators – essentially entities set up to incubate and manage new business opportunities. Such entities allows smoother and faster knowledge generation, providing a small company part of the prerequisites to develop. The following paper seek to analyse the relationship between knowledge management and business start-ups by using business incubators.

Key words: knowledge management, business incubator, start-ups.

1. Literature review.

A business incubator is an economic development tool designed to accelerate growth and success of start-ups providing support such as resources and services [1]. The main goal of a business incubator is to produce successful SMEs that will address initially domestic markets and are financially viable. The purpose of a business incubator is to increase the chances of a start-up to survive at the beginning, but it adds value by maximizing the firms' growth potential, also [2].

There is no just one universally accepted definition of business incubator. Dozens of definitions are available in academic literature, reflecting local cultures, scholars' vision or national policies [3]. This is the case considering that the concept itself it's constantly evolving, different countries and societies understand this concept differently and last but not least depending on the point of view, typologies and approach business incubator could be defined in many ways.

Allen considers a business incubator as a facility that provides affordable rent to new companies, shared accommodation and logistical services, and supports business management and financial assistance [4].Chinsomboon [5] considers it a controlled environment that fosters the care, growth, and protection of a new venture at an early stage before it is ready for traditional means of sell-sustaining operation. At the 1998 Helsinki workshop, a business incubator was defined as a place where newly created firms are concentrated in a limited space. Its aim is to improve the chance of growth and rate of survival of these firms by providing them with a modular building with common facilities (telefax, computing facilities, etc.) as well as with managerial support and back-up services. So, in this instance the main focus is on local development and job creation [6].The European Community Business and Innovation Centres– as they are officially known – are defined as support organisations for innovative small and medium-sized businesses (SMEs) and entrepreneurs operating in the public interest. They are set up by the principal economic operators in an area or region, in order to offer a range of integrated guidance and support services for projects carried out by innovative SMEs, thereby contributing to regional and local development [7].According to U.S. National Business Incubation Association, a business incubator is an economic development tool designed to accelerate the growth and success of entrepreneurial companies through an array of business support resources and services [8]. They regard as critical elements of an incubator issues such as on-site management, marketing and management resources, physical space, shared IT services, etc. An important issue included in the definition is the assistance in accessing finance or start-up capital to ensure enterprise growth. Gonzalez and Lucea [9] defines a business incubator as a controlled environment that helps new ventures at an early stage until they are able to sell-sustain through traditional means. Roussel [10] defines a business incubator as high-tech business clusters, the role of which is to pool resources to provide "brick and mortar" facilities, hands-on help, personal connections and expertise while, according to the European Commission [11], the concept is used to describe organizations that, in various ways,

help entrepreneurs to develop their ideas from inception through to commercialization and the launching of a new firm. A business incubator is an organization that accelerates and systematizes the process of creating successful enterprises by providing them with a comprehensive and integrated range of support, including: incubator space, business support services, and clustering and networking opportunities [12]. Hackett and Dilts [13] considers that a business incubator is a shared office space facility that seeks to provide a strategic, value adding intervention system of monitoring and business assistance with the objective of facilitating the successful new venturing development while simultaneously containing the cost of their potential failure. A business incubator is usually composed of small work units, its customers, giving them a learning environment and support to enterprises and emerging companies at an early stage, making them one of the most advantageous support for young entrepreneurs [14].

Incubators provide three main support to develop a successful start-up [15]:

a. an entrepreneurial environment and training;

b. direct access to consultants, trainers and investors;

c. visibility in the market.

There are many benefits offered by business incubators to start-ups [16]:

- Encourage rapid growth and high survival rates for them;
- Help identify opportunities to invest;
- Facilitates the commercialization of new ideas, to research universities and research institutes;
- Help create new jobs and solve problems of urban and rural economic development.

Some scholars [17] focused on the stages in incubation, considering that are three stages:

1) First generation, focused on providing accommodation/working facilities;

2) Second generation, focused on business support service;

3) Third generation, emphasizing networks development.

Others emphasized the evolution of the concept, describing three generation of business incubators.

First generation business incubators, common during 1950s – 1980s, offered mainly affordable office space and shared resources [18]. Cheap accommodation/working space was critical to many start-ups and has been identified by tenants as the most important benefit of joining a business incubator. Second generation, common during mid 1980s – mid 1990s, reached the highest peak when business incubators became a popular economic development tool to promote the creation of new technology-intensive companies [19]. There was need not only in just office space and shared resources but also in additional business support services (training, mentoring and other knowledge based services). Third generation, common after mid90s, adds networking into the equation. They provide access to technological, professional, and financial networks, to external resources and knowledge. At that time appeared also several new linked concepts like: virtual incubator, networked incubator, knowledge based incubator and online incubator.

Business incubators serve the following specific objectives [20]:

- Increasing the likelihood of successively business critical early years;
- Significantly reducing the "time release" for many companies;
- Possibility employers to focus on their key product development and providing assistance to a very large number of topics;
- Marketing research results;
- Creation of new jobs;
- Encouraging entrepreneurship and training.

The following factors have been identified as the most critical to the successful and superior use of business incubators for new venture formation [21].

- The ability to evaluate and react to risk well;
- The access to the right expert at the right time;
- Protection of product;
- To understand and exercise technology transfer privileges and intellectual property rights;
- To foster actions oriented towards the production of academic spin-offs and entrepreneurial spin-offs;
- To strengthen the education system;
- To define programs for assistance and training in entrepreneurial functions;
- Stimulation of existing market;
- To promote venture-capital actions;
- Having developed a good success formula, replicate it and franchise it.

Other factors have been identified as having been most contributing to failure in the use of business incubators for new venture formation [22]:

- Incompetence risk;
- Entrepreneurial team lacking sufficient capability, principally in marketing;
- Input sourcing;
- Managerial competence;

- Inexperience risk;
- Lack of familiarity with target market and relevant track record;
- Product risk;
- Insufficient uniqueness of product/service relative to competitors (differentiation);
- Inadequate product protection;
- Untapped market potential.

Both factors have, among their items, something in common: knowledge.

Although learning and therefore knowledge were used in management since ancient times, knowledge management has become part of academic literature in the last part of last century. In the present economy, learning and knowledge have become key success factors on international markets and intangible resources are of vital importance [23]. Competition between existing firms shifted from tangible resources (capital, raw materials, land, machinery and equipment, etc.) to intangible ones. In terms of intangible resources, items like knowledge and ability to use it (knowledge management) are crucial. Knowledge become the basic resource form many SMEs, one easy way to achieve prestige and competitive advantage. Generation, acquisition and use of knowledge - to name just a few of the transformation of knowledge - are extremely important for sustainable economic, social and cultural development [24].

This tendency applies equally to individuals, organizations, institutions, firms, regions or states. Actual economic environment is characterized by volatility, high income to employees and rapid changes in international competition. As a result, contemporary organizations cannot compete without skilled white collars and competent employees. Therefore, methods that companies use to manage and exploit knowledge, processes and technologies specific to their activity, including computer technology, are extremely important [25]. According to some specialists, no economic activity has attracted more attention in the last decade as knowledge management [26]. The same specialists notes, however, that while there are many inconsistencies, controversies and points of view radically different [27]:

• For some it is a form of information management;
• Other specialists approach it as a system to facilitate access to distributed IT;
• For others is just a temporary management fashion.

Today, knowledge management has become a science, a ramification of management with its own body of concepts, theories, models and best practices and a business.

2. Discussion.

It is an accepted thing that all successful companies generate and use knowledge. Whilst many new start-up entrepreneurs will simply hire smart people and leave them work, research have indicated that successful knowledge initiatives not only address this processes but also focus on the team structure and internally on the working circumstances to develop knowledge [28]. Start-ups faced with new technologic opportunities such as the Internet or biotechnologies still find it very difficult to find the organizational structures to face them.

SMEs are traditionally less involved than LSEs in knowledge management related activities, in the production of internal knowledge resources and in the access to external ones. For instance, in European Union, 9.5% of innovative SMEs cooperate with other partners, with higher percentages in the leading innovative countries like Denmark, Finland or Germany [29].

On the other hand, research on knowledge management mostly focus on large companies, even though an increasing part of literature start to analyse the positive aspects of implementing knowledge management in SMEs (Gassmann and Keupp [30], Van de Vrande et al. [31]). Moreover, empirical studies [32] show that SMEs in industrial or service sectors are more and more open to cooperation, in search for external sources of knowledge. Recent data reveals that the collaboration of European SMEs in innovation is growing at an annual rate of 7.8% and becomes a driving force of the EU innovation performance [33].

In any business, knowledge can come from three sources: own, attracted and acquired [34]. So, two out of three sources are external. Almost all experts, when referring to knowledge management, tend to usually consider internally generated knowledge and, to a lesser extent, the purchased one. Due to capacity multiplier for knowledge, the spectacular development of the Internet, web-sites, electronic libraries, the proliferation of conferences, seminars, fairs, exhibitions, etc., accelerating expansion of the media and their accessibility to people and companies, attracted resources - which are cheaper or sometimes for free - can be a major source of knowledge for SMEs. Moreover, some SMEs have developed strong international focus on acquiring knowledge and promote an organizational culture favouring this approach. Their knowledge is often the main pillar of competitive advantage.

The third category, the knowledge acquired, is usually the most well-known and discussed by practitioners. The causes that generate this situation are multiple [35]:

- Knowledge in the form of projects, computer programs, studies, etc., are purchased to meet the goals and specifically outlined needs of the organization;

- This type of knowledge involves spending budgeted money and expressly specified in the contracts, which form the subject of monitoring and evaluation of the managers and owners;

- The responsibility and applicability of each acquired knowledge set is precisely determined.

For a start-up, the volume of knowledge acquired is relatively low due to the costs involved. However, there is a tendency to amplify the commercial transactions which have as their object knowledge - outlining an increasingly observable knowledge market, consisting, for instance, of best management IT, marketing, financial, technological practices.

For SMEs, the reasons for relying more on external sources of knowledge are the same as for larger companies. The competition based on knowledge intensifies, and the knowledge related products or technologies development process accelerates. It thus becomes more and more difficult for SMEs to develop new product and technology by their own [36]. Some SMEs build their knowledge base gradually through incremental accumulation, usually from domestic market. Others take a more radical approach and build innovation capacities that allow them to target the international market directly [37]. So, even well-established SMEs have difficulties in acquiring knowledge when they need it and at the pace they need it.

For start-ups, incubation can facilitate an efficient treatment of knowledge using knowledge cycle competence of incubator' specialists and networks of companies within. We consider a knowledge cycle grouped into five specific phases that correspond broadly to specific functions:

• Assessment of knowledge available and accessible, both internal - its organizational and individual - and those of external stakeholders and potential partners. Incubator specialists can provide crucial know how in this stage;

• Forecasting needs and sources of knowledge, starting, of course, with existent knowledge and the mission and strategic objectives of the start-up;

• Getting knowledge within and outside the start-up. Business incubators can provide feedback on entrepreneurs' business ideas trough specific networks they established and counselling services they provide;

• Managing use and development of knowledge. In this stage the start-up operates complex operations on knowledge, largely repetitive, generating new products and services, dealing with more stable innovation process.

• Enhancing knowledge gives finality to previous phases, the phase in which the company benefits the most from previous stages. Typically, in this phase the start-ups begin selling knowledge, often in the same incubator network they were initially. Exploitation of knowledge can take place among partners in the incubator or outside.

Knowledge has two major concepts associated with it - strictness and absorptive capacity. Strictness refers to the possibility and the ability to transform knowledge into an explicit, transferable information. There are people and organizations that have this capability at a high level and others who, while possessing similar knowledge, fail in a less sensitive measure to raise the posts transferable [38].

Absorptive capacity designates the ease with which the receiver perceives knowledge, understand and retain it [39]. Other authors has defined it as a firm's ability to recognize the value of new information, assimilate it, and apply it to commercial ends [40]. It is studied on individual, group, firm, and national levels. According to Cohen and Levinthal [41] it is the ability of a firm to recognize the value of new, external information, assimilate it and apply it to commercial ends. Some authors have redefined the concept through the distinction between a potential absorptive capacity and a realized absorptive capacity and identified four dimensions: acquire, assimilate, transform and exploit [42].

According to Nicolescu [43], the main factors of absorptive capacity are:

a) Macro-social factors, which reflects the main elements on the economy, culture, population etc., quantity, quality, cost, etc. of existing and used knowledge in a country;

b) Individual factors that consider various forms, potential or manifest characteristics of the persons involved in the processes of generation, acquisition, use, storage, protection etc. of knowledge;

c) Organizational factors, expressing the structural and functional parameters of various natures of each entity, with relevant influence on the generation and use of knowledge. The maximum absorptive capacity is achieved when there is a heavy congruence between the three categories of factors. Naturally, congruence does not occur by itself, but depends largely on the characteristics of the people involved and the characteristics of each organization and management of the environment in which it operates.

Absorptive capacity is instrumental in understanding knowledge-capital formation, being a prerequisite for its formation. It is considered as an essential capacity to build competitive advantages over competitors. In a business incubator, a start-up builds up its knowledge-capital through dynamic knowledge management of its knowledge capacities which Lichtenthaler [44] define as a firm's critical capabilities of managing internal and external knowledge: inventive, absorptive, transformative, connective, innovative and desorptive capacities. These six capacities are linked through three knowledge processes - knowledge exploration, retention and exploitation - performed either internally or externally. The combination of these capacities used by a start-up can explain their difference in knowledge trajectories, organizational and innovation performance.

The knowledge's start-up needs come from two main sources categories:

• Outside the company, from other organizations, individuals, media etc.;

• Within the company, through acquisition from other members of the organization, from other groups or pool of knowledge of the organization as a whole.

Very often, most knowledge learned by the new start-up and its employees come from the environment. It is therefore very important to know which are the major factors influencing knowledge transfer within the incubator. Knowledge previously owned, which gives it the ability to recognize the value of new knowledge or information and to assimilate and use for commercial purposes is absorptive capacity. According to S. Zahra and George G. [45], absorptive capacity has four complementary dimensions or, considering their content rather four essential components:

a) Acquisition, which is defined as the ability to recognize, evaluate and purchase a new knowledge that is critical to the organization's activities;

b) Assimilation, referring to the company's ability to acquire new external knowledge processes and procedures for analysing, processing, understanding and interpretation of such knowledge;

c) Transformation, which takes into account the company's capacity to develop such procedures and processes to facilitate combining existing knowledge with new knowledge acquired and assimilated;

d) Operation, which lies in the company's ability to use new knowledge gained commercial organization to achieve its objectives.

Based on these four dimensions, professionals covered defines two types of absorptive capacity:

a. Absorptive capacity potential that lies in the ability to acquire and assimilate external knowledge. This capacity expressed receptiveness to new knowledge of the organization and enhances its ability to adapt and innovate
b. Achieved absorptive capacity, which is the ability to transform and exploit new knowledge, to obtain quantifiable performance of the firm.

Practice shows that the companies differ in the level at which possesses two capabilities. The organization is engaged in intense learning processes, the capacities are developed both with positive effects in terms of effectiveness and efficiency of the organization. Knowledge management is essential for a start-up to identify and consider both forms of knowledge, tacit being more difficult to meet and process.

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Romanian agriculture and weather index insurance - new risk management technique

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Abstract.
The intensification of the agricultural crisis, caused by the more and more frequent weather changes, mainly, the excessive drought, floods on extensive areas, powerful storms, represents the main cause of Romanian agricultural damages. The global warming and extreme phenomena lead to the decrease of arable land, migration of the population, but especially the reduction of Sweetwater reserves. The lack of investments in this domain, the unsure support of the state for agriculturists, the refuse of the insurance companies to ensure certain catastrophic risks leaded to a major impasse in agriculture. This thing represents a danger for the internal food in the following years. The prognoses of the experts show that yearly the weather changes will be more drastically. What is to be done in this context? In this paper, we would like to find and present new solutions for the risk management afferent to catastrophic phenomena of Romanian agriculture.
Key words: weather index insurance, traditional insurance, risk management, catastrophic risk

1. Introduction.

Agriculture is a sector which has a special economic and social importance for Romania [1]. The intensification of the agricultural crisis, caused by the more and more frequent weather changes in Romanian (mainly, the excessive drought, floods on extensive areas, powerful storms), represents the main cause of Romanian agricultural damages. The lack of investments in this domain, the unsure support of the state for agriculturists, the refuse of the insurance companies to ensure certain catastrophic risks as drought and floods leaded to a major impasse in agriculture.

Drought and floods destroy annually in Romania thousands of cultivated hectares so that the food provided by internal resources is diminishing. The prognoses of the experts show that yearly the weather changes will be more drastically. The specialists of the National Meteorological Administration (NMA) have conducted a study on weather changes in the past 100 years at the national level. If hitherto there were two or three years of drought or floods every decade, "from 2003 onwards each year was either extreme drought, either floods, so that we have no longer term of comparison in the past, but we know for sure that hereafter it could happen of one of these catastrophic risks. There is no year without these in agriculture." [2]. Moreover, drought and floods leaded to the reduction of arable land, migration of the population, but especially to the reduction of Sweetwater reserves: "Water will become the keystone of our development. In 2007, Romania had 7,000 cubic metres available of Sweetwater per capita, but in 2025 will be only 5.125 cubic meters. Given that agriculture uses 65% of available water, we will have big problems "[3], says Cristian Hera, from the Academy of Agricultural and Forestry Sciences.

The impact of weather changes on agriculturists is a major one, and the European Community will extend its support for agriculture only if Romania is preparing for the part of profile insurance. "The agriculture of Romania depends a lot on weather (...). There are three types of risks in Romania: the common regional, price and production risks. Romania is still very exposed to price risks, as well as production risks. The drought and floods in the last years have greatly influenced the agricultural production. Therefore, there should be adopted strategies made for catastrophic risks and introduced assistance programs in the case of risk, as well as agricultural insurance" [4], specified Blarel Benoit, World Bank Country Manager for Romania.

What is to be done in this context? As I said, through this paper, we intended to find and to present new solutions for managing relevant risks of catastrophic phenomena from the Romanian agriculture.

2. Types of risks in agriculture.

In daily work, the agriculturists deal with a variety of risks that require agricultural insurance. In this category are included both the risks caused by nature and those caused by humans.

Category of risks	Manifestation form
Climatic	hail, frost, drought, floods, wind, fire, snow, ice etc.
Biological	diseases, epidemy, invasions of pests, etc.
Geological	earthquake, landslides, volcanic eruptions, etc.
Market	internal and international variation of prices, changes required by quality standards, etc

Caused by humans	war, financial crisis, defective management, etc.

Fig. 1 Types of risks in agriculture. Source: personal overwork of the author

Certain agricultural risks are over the control power and intervention of agriculturists (natural disasters, international financial crisis, etc.) and others are totally or only partially controllable (debits variations of some watercourses, diseases, invasions of any insects, etc.).

The appearance or occurrence of such events is not always predictable and therefore the agriculturists are not always prepared to manage the risks. From this perspective, the agricultural insurance benefits are indisputable.

The risk can be managed before or after an event. In this sense there can be identified two main approaches: the reduction or mitigation of risk effects (ex-ante) and subsequent risk control (ex-post).

The risk reduction may be performed through the diversification of the sources of income, such as: the obtainment of income from other activities than the agricultural ones (or the use of personal savings), the migration towards less risky agricultural areas, through the investment in superior technology that may be less affected by the producing of certain risks as the performant irrigation systems or seeds resistant to the attack of some specific harmful pests.

As a conclusion, we could observe that the ability of agriculturists to maintain or even obtain additional income from the agricultural activities depends on the efficiency of risk management strategies that are used and on their degree of adaptation to the typology of risk

3. Limits of traditional insurance.

The traditional agricultural insurance with multi-risk (refers to a variety of risks) or with unique-risk (refers to only one risk), present a series of limitations, becoming more and more avoided by the potential buyers. As results from Fig.2, the main limits of traditional agricultural insurance are:

Name	**Explanations**
informational asymmetry	the successful insurance programs require the insurer to dispose of adequate information (appropriate enough) about the nature of the risk to be insured. This is very difficult for insurers because the agriculturists will always know more about their potential productions than any expert of insurance company;
unfavourable selection (the opposite)	It is possible that due to the involvement of the public sector, the private insurance companies to pay attention especially to "good" risks, letting the “bad” ones uncovered and implicitly in the care of state;
administrative costs	The more deficient (lacunal) is the information related to agricultural exploitation, the more higher the costs of risk inspection are;
moral hazard	all risks determined by people behavior represent moral hazards. The degree of attention, honesty or level of education of the policyholder (but not only) can influence its assumed moral hazard. For example, he can fire its own harvest and then pretend that it was burned, etc.

Figure 2. Limits of traditional agriculture insurance. Source: personal overwork of the author

4. Weather index insurance (WII).

In recent years, internationally, a variety of new financial mechanisms have the ability to solve many of the problems of agricultural insurance traditional schemes. New instruments function on the basis of the payment configuration of insurance compensation so it will only be paid at the time of reaching a certain threshold determined by statistical calculations called "index". The origins of WII come from the international market of weather derivatives, where the big corporations cover their weather risks. The interest for WII application in the agricultural domain increased starting from the belief that the traditional insurance products were not viable for the developing countries

The basic index has to be based on an objective measure (as precipitation, wind speed, temperature), showing a strong correlation with the variable of interest (in this case, the crop yield). In addition, the weather variable that can form an index should have the following properties: to be easily observed and measured, to be objective, to be transparent, to be reported in good time, to be constant over time and to manifest itself over a large area.

Given the above mentioned requirements, the most used weather index-based are drought and temperature. The risk of hail and fire do not lend themselves to weather index insurance because they are small and localized risks.

Micro - level	Weather index insurance for small agriculturists, intermediated by rural financial institutions e.g.: India, Nicaragua, Malawi, Thailand, Honduras
Meso - level	Weather index insurance for rural financial institutions that grant loans to poor agriculturists e.g.: India, Malawi, Vietnam
Macro - level	Weather index insurance or credit lines conditioned by weather index for governments or international organizations that provide security to the poor. e.g.: Ethiopia, Malawi, Mexico

Fig.3 Applications and experience in index-based insurance at international level – especially in developing countries. Source: personal overwork of the author

In international practice there are two different types of index-based agricultural insurance: weather index insurance and surface index-based insurance.

Weather index insurance – the insurance compensation will be paid by the insurer under the conditions of a predetermined trigger mechanism called "index". The index can be formed by a variety of weather indicators, such as: the volume of rainfalls, temperature, humidity, wind speed or the number of sunny days, each of them being validated by an independent third party and correlated with the individual damages registered as a result of the event occurrence.

Surface index-based insurance – insurance compensation payment is made in the moment of harvest surface decreasing (and implicitly of the agricultural production) as a result of a sinister (drought, flood, etc.) under a certain percentage determined in function of the climatic characteristics of the area. The insurance is sold in standard units (for example, monetary units or "units") afferent to a policy or certificate for each unit purchased. The insurance premium is the same for each customer, ensuring an equal compensation if the insured event is going to happen.

The buyers are free to purchase as many insurance units they want. The emergence of a sustainable system of insurance weather index-based will boost productivity and international competitiveness of the Romanian agricultural producers, processors, exporters and other businesses exposed to weather risks. They can support the preparation of Romania for fiscal shocks caused by major weather events - drought, floods and can facilitate the identification of segments of the population most vulnerable to weather change and the implementation of effective plans for adapting to such changes.

5. Conclusion.

The agriculturists complain that no company of insurance in Romania assumes the catastrophic risks in agriculture, in that it refuses to insure drought and floods. At the same time, the insurance companies motivate that drought is a sure risk that occurs annually in Romania and the insurers do not have the financial strength to take such risks.

No insurance companies in Europe ensure Romanian cultures for drought: "most of insurance companies in Europe do not take the catastrophic risks such as those in Romania because it represents a sure risk," said the President of FATA Insurance.

Under these conditions the chance of Romanian agriculture consists of the adoption of complex measures on several levels: crop insurance in cases of extreme risk or even setting up special funds for disasters to be attended by all the "main players" (the Government, insurance companies, agricultural producers), by public-private partnership.

Other solutions would be the Governmental support in the form of subventions, the unification of agricultural areas in larger exploitations and the attraction of communitarian funds.

6. Acknowledgments.

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Research regarding family involvement on change on Romanian SMEs

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Abstract.
In this paper we analyse the impact of family involvement over change objectives into Romanian families SMEs. The results obtained using a sample of 800 SMEs mainly from IT sector support the idea. In addition to contributing to family business theory and entrepreneurship by testing variables as sources of change among family business, our findings also present a broader perspective of Romanian entrepreneurial landscape from family business concepts.
Key words: change, entrepreneurship, small business

1. Introduction.

During the last 10 years, researchers has attempted to determine how family involvement influences company performance (Ceptureanu, 2012; Barontini, 2006; Chrisman, 2004; Dyer, 2006; Miller, 2007). However, the evidence has been inconclusive (Rutherford, 2008). This paper develops a theoretical and empirical explanation about how family involvement influence change, as measured by family control intention and family commitment in order to affect the implementation of change objectives by SMEs (Chrisman et al. 2012). To do so, we rely on entrepreneurial theory because of its general accepted relevance to managerial studies (Argote, 2007) and because it points out that stakeholders in a company have a diverse set of objectives. Also, to argue that the set of objectives adopted will be influenced by family involvement on change processes, we count on stakeholder theory because it provides perspectives into which stakeholders are likely to affect a company selection of objectives (Mitchell, 1997). Based on these theories, we consider that family involvement on change gives the controlling family the ability to influence company behaviour but doesn't stipulate whether and how it will be used (Chrisman et al. 2012). The empirical results of our study support this approach. The study focuses on the adoption of change objectives for several reasons. In the first place, since performance should be measured accordingly to companies' objectives, we believe that the objectives of change adopted by family business merit as much study as performance. Second, objectives, in general, drive firm behaviours and performance (Astrachan, 2008). Therefore, an understanding of a family company objectives should be a precursor to understanding its behaviours and performance. Of course, the adoption of such objectives should differ among family business (Westhead, 2007). We contribute to the theory by providing a rationale for how family involvement on change may influence family business behaviour and performance. We test that rationale using a sample of 800 Romanian IT SMEs. We focus on this specific type of company because they constitute the large majority of firms in the economy and because the connections between family involvement and change objectives is likely to be more important in influencing behaviours in SMEs rather than in larger companies where consistent numbers of white collars, wider ownership dispersion, and complex activity may dilute the relationships of interest.

2. Change objectives into family SMEs.

Behavioural and stakeholder theory suggest that family SMEs may be particularly likely to emphasize change goals. Family SMEs, like any other business sustain multiple goals and these goals adopted by family companies are more likely to include change goals than those adopted by other types of business. In order to achieve their goals, the family create "interest groups" made from owner and other family members/entrepreneurs within an organization in order to attempt to influence a variety of processes (Argote, 2007), including entrepreneur decision and predictions (Hambrick, 1984). Even more, failure to achieve objectives prompts a search for changes in order to restore the balance between predicted objectives and results (Baum, 2007); by contrast, resources made available through objectives accomplishment minimize conflicts and encourages a search for new finishes and ways through innovation (Geiger, 2002). Since the family comprises a very important union into the family business, entrepreneurial theory suggests that the partnership of a family with the ownership and business management will give it the power to influence company's objectives. Indeed, family business researchers consider that family involvement will lead to distinctive objectives, behaviours and performance outcomes (Chrisman, 2005; Dyer, 2006). Carney (2005) explained that a family's control of the agents of change in the family company provides them with the latitude to make decisions that owners and white collars in other types of business do not possess, since in such a situation the family is less hampered by internal culture and controls. Furthermore, family involvement in the ownership and management of the business provides the ability to engage in particular behaviours that would either be impossible or more difficult in other types of businesses. On the other hand, stakeholder theory provides consistent and complementary predictions about change objectives in family firms (Mitchell, 1997). From this perspective, family business are likely to emphasize change objectives because they have a powerful stakeholder group represented by the family that often has a large variety of goals. Because of the powerful and direct linkage between the family and the

business and the wish of the commanding family to protect the identity of them, family businesses may be more likely to adopt objectives of change and these may be a significant driver of organizational behaviours (Zellweger, 2008).

3. Methodology.

Data were collected from clients of the National Agency of the Trade Registry of Romania (Oficiul National al Registrului Comertului- ONRC) by a professional cooperation conducted by me and Professor Sebastian Ceptureanu from Bucharest University of Economic Studies. We sent questionnaires to 1242 entrepreneurs (family owned business) and results 800 valid responses from entrepreneurs of family businesses, for a total response rate of 64, 4%. To minimize prejudices in responses, the order of questions representing the dependent /independent variables were mixed (Verboncu, 2011; Nicolescu, 2011). Of course, subjects were assured that their responses would be handled confidentially. In order to obtain valuable and realistic results, our sample needed to consistent on SMEs that have the potential to experience and demonstrate significant changes sustained in the last years and high managerial decision making, as well as family implication and synergy (Ceptureanu, 2010). Thus, we restricted our analysis to companies with at most fifty full-time-equivalent employees (micro and small companies according to Romanian law regarding SMEs), reducing the sample size to approximately 64% from original size. Such attrition rates are common in studies of SMEs (Chrisman, 2004; Schulze, 2001). Regarding components of family involvement on change, we utilized three variables to evaluate the components of family involvement among the companies in our sample: % of family ownership, the number of family members who are managers/entrepreneurs in each company, and the number of generations of family members involved in the business. These variables are among the most densely used measures in the literature (Klein, 2005). We also included three control variables. The first two were congruent with those that previous research suggests might be related to family company behaviour: company age, size and sectorial measures (Chrisman, 2004). Company age was measured as the number of years since the born of the firm. As suggested by Zellweger (2008), since the family should become more bounded to the company over time, age should be positively related to change objectives. Company size was measured by the number of employees. As business increase in size the desirability of change objectives could potentially increase. Pollak (1985) noted that family business are more suited to compete in some domains than in others and this could affect their ability and desire to pursue change objectives. Therefore, in this study we focus only on IT sector, which is representative for Romanian fast growing economy and entrepreneurship. This variable was measured by classifying all firms into one sectorial category: IT.

4. Findings.

Among the 800 companies selected from the large sample, the average family ownership stake was 100%. The firms had an average of 1.83 family managers and 68% of the sample had two or more family managers. Excluding the main entrepreneur, 1.42 family generations were or had been involved in the company. 71% of the sample indicated that at least one other family member (except main entrepreneur) was involved in the business and 21% involved two or more family generations.

Variables	Areas of investigation	Findings
• percent of family ownership • number of family members who are managers/entrepreneurs in the company • number of generations of family members involved in the business • company age • company size • sectorial measures (only IT)	Family perception about relationship between change and SME survival	65,12% of family business members agree with the statement that the change provides better conditions for survival of the SME in the medium and long term
	The level of family involvement of change based on organizational perspective	Regarding organizational structures involved in the change process family members emphasize the role of Sales Department, followed by R&D Department and HR Dpt.
	Perception of family regarding changes on the market	Changes results on the market is reflected especially into creation of a product /service (51, 37%) and use of old resources on a new manner (48, 37%).
	Family perception about determinants of change	The determinants of change identified by family members were (a) New ideas generated by them (76,5%), and (b) Changing interests of stakeholders (73,5%). Also, 53,12% of respondents believe that the process of organizational change cannot be controlled completely vs. 46,85% believe that it is possible to direct organizational change

	Areas affected by the change	The areas affected by the change are represented by (a) New products / services (57, 25%) (b) Employees (48, 12%), (c) Organizational structure (47,25%)
	The success of implemented changes	Involvement of family during changes generate a positive results of the process into 66,6% of the sample, while only 33,3% of respondents were dissatisfied with the results
	Family as subjects of change	60% of respondents identified as a promotors (generators) of change, 26,37% as strategists (working with the team to see) and 13,63 as passive subjects on this process.
	Involvement of family into reducing/suppressing resistance to change	72,62% of subject % involve direct into this process using specific tools/instruments in order to reduce resistance. 27,37% family respondents declared that they are not actively involved because of their lack of knowledge, negotiation skills or other causes.

5. Limitations of our study.

Although we have contributed to entrepreneurship generally and family SMEs studies particularly by testing the relationship between family involvement and change this study has several limitations. For start, we assumed that stakeholders would dominate the decision-making agents of change for small business (Ceptureanu, 2009; Ceptureanu, 2010). Although this generally supported by our results, we must admit that SMEs are also susceptible to the influence of competition or external stakeholders who might limit the willingness to pursue change objectives. Second, we used a convenience sample, a limitation shared by the broad majority of studies in the family SMEs literature (Schulze, 2001). We consider the sample as quite large (800 SMEs) and is drawn from an identifiable population of SMEs identified in Romanian White Book of SMEs (2014th edition) and appears to possess demographic characteristics that are similarly to the population of SMEs in Romania. On the other hand, our convenience sample is largely composed of businesses that are micro and small, young, and overrepresented by male owners. This means our sample is not necessarily representative of all companies, families and so on. Finally, our results are constrained by our measures (Ceptureanu, 2010). There are many potential approaches of measuring family involvement on change. In this study we selected variables which are consistent but not necessarily identical to those used in prior studies (Chrisman, 2004; Klein, 2005). Our measures of family involvement to change, lack thorough construct validation while methodologically were acceptable. We could consider additional items to be added and tested to improve results for future research.

6. Conclusions and future research directions.

In this paper, we investigated the connections between family involvement and change objectives. Our results indicate that

(1) Family involvement influences the adoption of change objectives;

(2) Family involvement influences the methodology regarding implementation of change, and

(3) The significance of the connection between family involvement and the adoption of change objectives is closely related to performance obtained.

These results suggest that although family involvement in change (processes and results) is high, the relationship is partially mediated by family's desire to use its ability to influence firm behaviour in a particular/specific manner (Carney, 2005). Considering that objectives are indeed strong predictors of company behaviour and performance, our findings suggest that variables describing the family involvement in change will be useful in identifying a sub-set of family companies that are likely to behave in substantially different ways from nonfamily firms and other family SMEs where the family is less willing to exert its influence in particularistic ways (Carney, 2005). In other words, although the adoption of change objectives is only one aspect among many that may differentiate conducts and performance of different types of family SMEs--our results suggest that if we are interested in isolating the causes and results of the family effect (Dyer, 2006), it is important to scale family involvement on change since this indicates the skill of a family to use its power it might be willing to do so (Chrisman et al. 2012). In addition to those, there are several additional research implications that occurred from our findings. First, future research should attempt to consider the combined impact of the components of involvement of family on change when investigating the conducts and performance of family SMEs (Ceptureanu, 2012; Nicolescu, 2009). There are some entrepreneurial, behavioural, resources and results variables that need to be compared such as differences in human capital, survivability capital social capital etc. (Chrisman et al. 2012; Arregle, 2007; Pearson, 2008; Sirmon, 2003). A consideration of family

involvement on change might lead to a greater understanding of the determinants of these conducts as well as make clear some of the inconsistencies in preliminary studies that have investigated family business performance (Rutherford, 2008). More, some experimentation is still needed on how exactly we should define and measure family businesses. However, further experimentation should be purposeful and linked within the theoretical foundations of the field (Carney, 2005; Habbershon, 2003).
In conclusion, the major contributions of this article are:

- To generate an empirical evidence and a theoretical explanation regarding how the family influence changes into SMEs;
- To identify implications for the future application of entrepreneurial theories to organizational studies

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The role of small and medium-sized enterprises to upgrade the social cohesion of Romania

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Abstract. For the most part of the European Union, the role of SMEs was an important one regarding the contribution to the economic growth and improvement of the social conditions of the population before the crisis and, more likely, it will remain the same after the crisis.

This article analyzes synoptically the factors that can influence the growth of SMEs sector in Romania and the relevance of this category of companies for the increase of economic convergence process toward EU average, firstly felt by improving the living conditions of individuals.

Keywords. companies, SMEs, economic growth, economic development, convergence

1. Introduction.

Generally, the role of small and medium-sized enterprises (SMEs) is considered extremely important concerning the support of economic growth and, especially, the increase of number of jobs in the member states of the European Union, where this category of companies has a major part of the total number of companies and employees.

The small and medium-sized enterprises are defined by the European Commission as enterprises that have up to 250 employees, on the one hand, and an annual turnover of at least 50 million euro or a total annual balance sheet (the total value of assets) of maximum 43 billion euro, on the other hand

As shown by the EIM Business & Policy Research (2012) study, over the period 2002 - 2010, 85% of the newly created jobs in EU were registered in SMEs sector, as compared to USA, where the role of SMEs concerning the job creation is more reduced (for example, over the period 2002 - 2007, 58% of the newly created jobs by private sector in USA were from SMEs) suggesting that the increasing engine of the number jobs in Europe is represented by companies with up to 250 employees, while in USA the accent is on the performance of big-sized companies.

According to data of the European Commission, between 2010 – 2013, the SMEs occupation, decreased in the member states of EU with 0,5 % while, if there are also considered the big-sized companies, per totally the occupation registered a quasi-stagnation, increasing with only 0,25% (see the following Figure 1).

However, if we eliminate the evolutions of constructions sector –powerfully affected by crisis in many of the European states that before 2008 registered a real estate boom- , we could observe an increase of the number of occupied persons of 0,33% in case of SMEs, and of 0,9 % in case of all companies. In this context, according to Trasca D.L., Aceleanu M.I., Sahlian D. (2013) and Sahlian D.(2014) the cohesion policy represents one of the solutions of the current crisis surpassing because the efficient use of its financial instruments determine the strength of the European economy competitiveness.

On the other hand, the medium-sized companies (with a number of employees between 50 and 249) and the big-sized companies (with at least 250 employees) registered on average a positive performance in the same period of time from the point of view of occupation, succeeding to adapt better and take advantage of the competitive advantages (in terms of productivity increase, financing opportunities of the activity development or entry into new markets, inclusively the external ones).

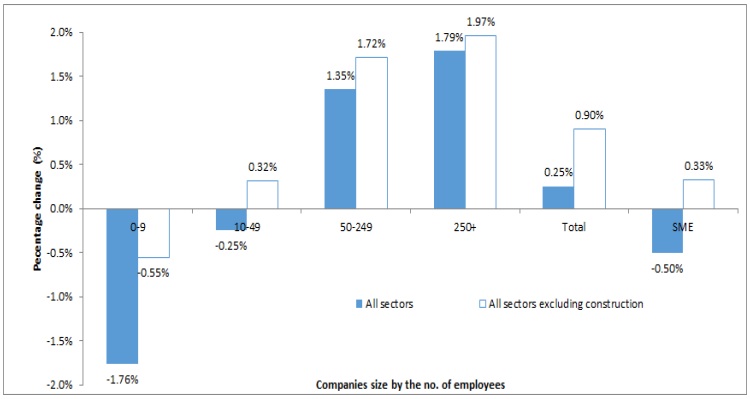


Figure 1: Evolution of the occupation in EU between 2010 -2013 according to the size of the companies
Source: European Commission (2015)

2. The situation of SMEs in Romania after the crisis.

Romania is an economy dominated by the category of microenterprises, their part in the total of the companies being about 90% in 2014, according to the data of the European Commission. At the other end, the big-sized companies that have over 250 employees represented only 0,3% of a total over 435260 companies (see Figure 2).

Also, 88% of the total of 433858 SMEs represents the enterprises with less than 10 employees. This structure dominated by microenterprises, that characterize the economy of Romania, makes the activity of the Romanian companies firstly dependent on the evolution of the internal demand and domestic macroeconomic conditions (on the evolution of the internal credit (for consumption and investment), on the evolution of the unemployed people and households available income or on the fiscal-budgetary measurements adopted by the government, etc.).

Figure 2: Structure of the number of Romanian companies according to the size of the company (2014)

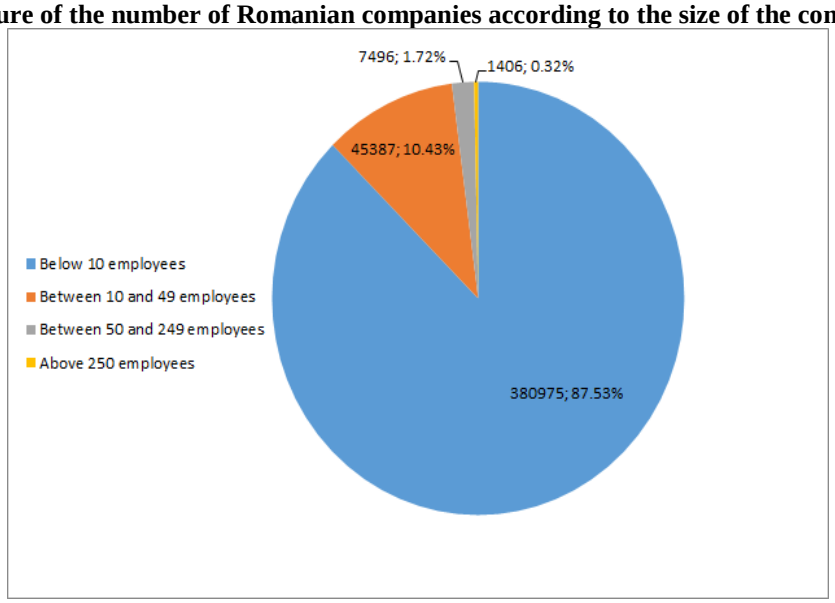


Figure 2: Structure of the number of Romanian companies according to the size of the company (2014)
Source: European Commission, Eurostat (2014)

Thus, as Romania had, over the period 2009-2010, one of the most powerful economic decline in the European Union (after the Baltic States) and a significant adjustment to the structural budgetary balance, along with the depreciation of the national currency and the limited possibilities of bank funding, these evolutions have also been seen at the level of small and medium-sized enterprises (as number of enterprises and employees), especially in the case of those that were activating in sectors that were in powerful expansion before 2008, as constructions and retail.

The real Gross Domestic Product suddenly decreased in 2009, with 6,6% (after an increase of 6,6% in 2008), and the post-crises recovery was a difficult one: GDP also continued to decrease in 2010, and GDP continued to have a positive increase in 2011(+2,2%), being consolidated in 2012, 2013 and 2014 when the increasing rates remained in positive territory, with +0,7, +3,4% and +2,9%, especially on the background of net export performance, on the part of the utilization of GDP, industry and agriculture, on the part of GDP formation.

The impact of crisis over the evolution of the number of enterprises and employees employed in the SMEs sector is analyzed in the following paragraphs. According to the data of the European Commission supplied within the annual SMEs Performance Review, it could be observed that the number of companies of SMEs sector was lower with 72500 in 2014 as compared to 2008, being registered a decrease of 14%. The only segment where the number of enterprises in 2014 was over that in 2008 was the segment of small-sized enterprises (10 to 49 employees) (see Table 1).

Table 1: Evolution of the number of companies in Romania (2008-2014)

	Companies size class	2008	2009	2010	2011	2012	2013	2014
Micro-enterprises	Between 0 – 9 employees	450,396	439,351	394,660	353,057	358,943	373,944	380,975
Small and medium-sized enterprises	Between 10 – 49 employees	44,679	42,130	39,957	43,133	43,501	44,682	45,387
	Between 50 – 249 employees	9,506	8,165	7,624	8,148	7,766	7,669	7,496
Big-sized enterprises	Over 250 employees	1,824	1,552	1,495	1,540	1,459	1,455	1,406
Total of enterprises		506,405	491,198	443,736	405,878	411,670	427,749	435,262
Total SMEs		504,581	489,646	442,241	404,338	410,210	426,295	433,858

Source: European Commission (2014)

From the perspective of the evolution of the number of employees in the sector of SMEs in Romania, we can say that in 2014 SMEs employed 67% of the total number of employees (2,787 million of 4,146 million persons). The effective of salaries still remained under the level in 2008, the number of employees being with approximate 4 % less in 2014 (or with 117400 employees in absolute terms). The most powerful affected were the employees of medium-sized enterprises (between 50 -249 employees) where the decrease was of two ciphers, respectively 11, 8% (or 114300 employees.

As in the case of number of companies, the only segment of SMEs that exceeded the values in 2008, the last year of economic boom was the one of small-sized enterprises (10-49 enterprises), in 2014 the number of employees being with 6,8% higher (or 61500 employees).

This increase of employees came especially during the increase of employment among small-sized companies in the sector of manufacturing industry, but also in the sector of administrative, support, accommodation and food services that were able to compensate the declines of the sector of retail and wholesale and constructions in 2008-2014.

Table2: Evolution of the number of employees in Romania (2008-2014)

	Companies size class	2008	2009	2010	2011	2012	2013	2014
Micro-enterprises	Between 0 – 9 employees	1,027,442	966,217	879,419	850,618	872,249	931,091	962,767
Small and medium-sized enterprises	Between 10 – 49 Employees	907,298	826,836	788,098	850,058	870,714	929,499	968,792
	Between 50 – 249 employees	970,225	833,068	776,301	829,318	813,958	848,216	855,924
Big-sized enterprises	Over 250 employees	1,508,798	1,326,260	1,259,481	1,281,509	1,266,321	1,349,456	1,358,963
Total of enterprises		4,413,763	3,952,381	3,703,299	3,811,503	3,823,240	4,058,264	4,146,444
Total SMEs		2,904,965	2,626,121	2,443,818	2,529,994	2,556,921	2,708,806	2,787,483

Source: European Commission. Euro stat

This poor performance of SMEs in terms of growth in the number of companies and employment after 2010 can be caused by several factors, the first of which is a limited access of SMEs to financing, SMEs being more dependent on funding from foreign sources, mainly bank finance.

Regarding the report of Employment and Social Developments in Europe (2015), this poor performance of SMEs in terms of growth in the number of companies and employment after 2010 can be caused by several factors, the first of which being the limited access of SMEs to funding, the SMEs being more dependent on the funding of foreign sources, mainly bank funding. According to Popa R.A. (2015) the manufacturing sector

registered a high performance among all the sectors of Romania's economy in attracting foreign direct investments. Also, in order to achieve the objectives of sustainable development, there is necessary, according to Moldovan I.A. (2015), a shift in the nature of investments, as current trends will not bring the desired results in this respect.

So far, in many member states the credit capacity of the sector of non-financial companies remained weak, the factors of offer and request being explicative elements. On the side of the offer, it can be mentioned the restructuring of the financial and banking sector and financial disintermediation that occurred as a result of the crisis. On the other side, the higher interest rates in the states that are vulnerable, need structural reforms and continuation of the fiscal consolidation process (including also a higher risk of default) can significantly affect the access of SMEs to credit on the part of banking sector.

In addition, it is considered that the limited access to funding is expected to reduce the number of start-up companies, what is worrying given that, among SMEs, the young companies have an important role in the creation of new jobs.

In Figure 3 it was presented the index of the access among SMEs created by the European Commission to follow the evolution way of the conditions of the access to funding of small and medium-sized enterprises over the time in the EU member states. The index has the base 2007 and is comprised of two sub-indexes: (i) a sub-index of the access to debt finance and (ii) a sub-index of the access to equity finance, venture capital or by business angels.

According to the values of this index, Romania has had in 214 an extremely low access to funding, exceeding only the states as Cyprus and Greece, countries that dealt with bank crisis and more deeply difficulties of funding. Among the most important factors that impede the access of Romanian companies to bank funding are preponderantly the high debt rates and bureaucracy required to access a credit, compared with the EU average where the main obstacle is represented by the collateral and/or insufficient guarantees.

Beyond the access to funding, the Romanian companies support that the main problems dealing with are represented by regulation, competition from other companies, as well as by production costs or the workforce. Unlike the perception from Romania, at European Union level, the main problem of enterprises is the lack of clients (see Figure 4).

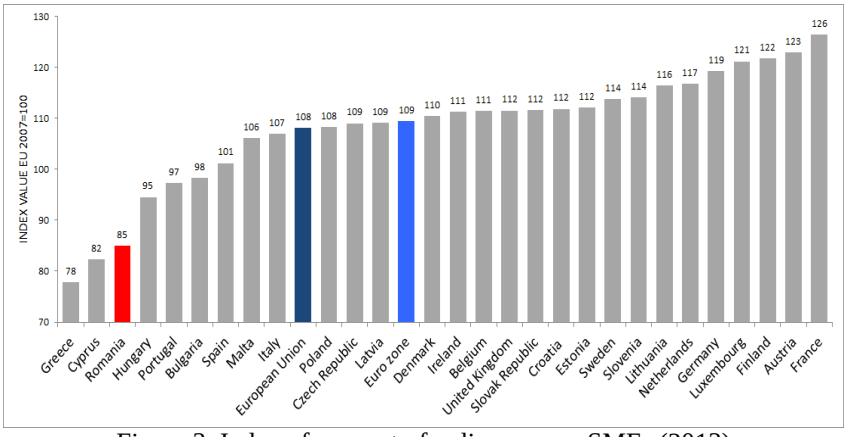


Figure 3: Index of access to funding among SMEs (2013)
Source: European Commission

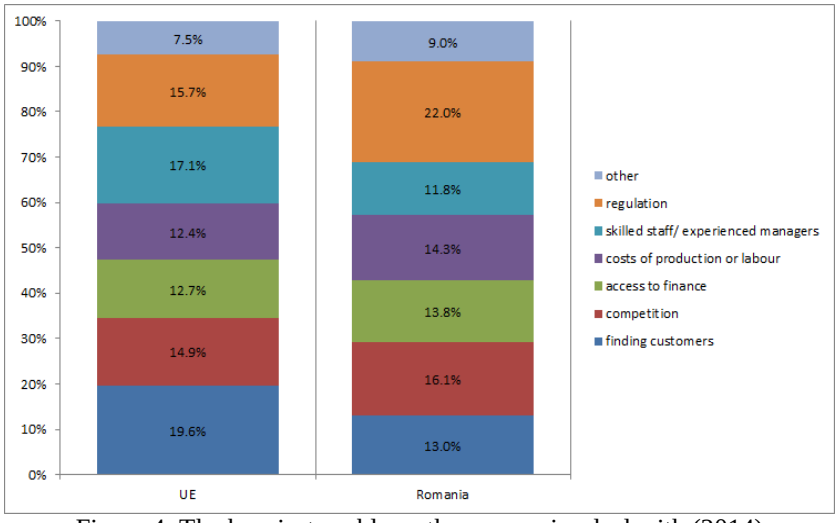


Figure 4: The heaviest problems the companies deal with (2014)
Source: European Commission (2014)

3. The importance of SMEs in the social plan.

Owning a share of 67% of the total number of the employees of Romanian companies, the development and performances of SMEs sector have also an important relevance for the improvement of living conditions and increase of social cohesion among population because the salaries have the greatest contribution to household income (see Table 3).

Table 3: The structure of total household income, on formation sources, in 2014, 1st trimester

Category of income	**Part of total household income**
Money income	15.9%
Income from property and selling assets of the household	1.3%
Income from social performance	23.8%
Income from independent activities	2.5%
Income from agriculture	3.4%
Income from salaries	**51.1%**
Other income	2%

Source: National Institute of Statistics

Also a role in the increase of disposable incomes at the level of the individual it may also have the system of taxation and allocation of social benefits when the simple increase of the occupation rate does not necessarily ensure an increase of individual income.

From the point of view of the employees' structure number in function of the size of companies, it can be seen that 67, 22% of employees work in a SME, while in big-sized companies work only 32, 88% of employees (see Figure 4). Although the micro companies have over 90% of the total SMEs, these had at the level of 2014 only 962.767 employees, namely 34,53% of the total SMEs employees and only 23,21% of the total of employees.

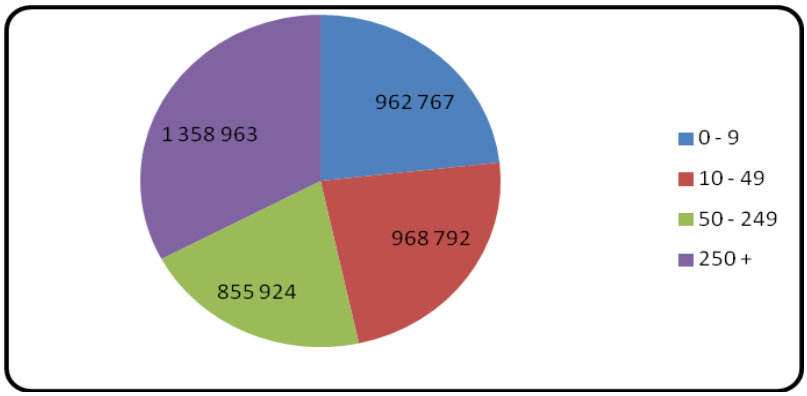


Figure 5. Structure of employees' number in function of the size of the companies (2014)
Source: European Commission. Eurostat

In addition to providing jobs, the SMEs are detached from importance and contribution point of view to the creation of gross value added.
Thus, these companies have created at the level of 2014 almost 50% of total gross value added, and the lowest part in the added value created by SMEs companies pertain to micro companies (see Figure 5).
In other words, although from economic point of view the SMEs are much more numerous than the big-sized companies; these ones have the same important contribution in securing jobs and creating the added value, as SMEs.

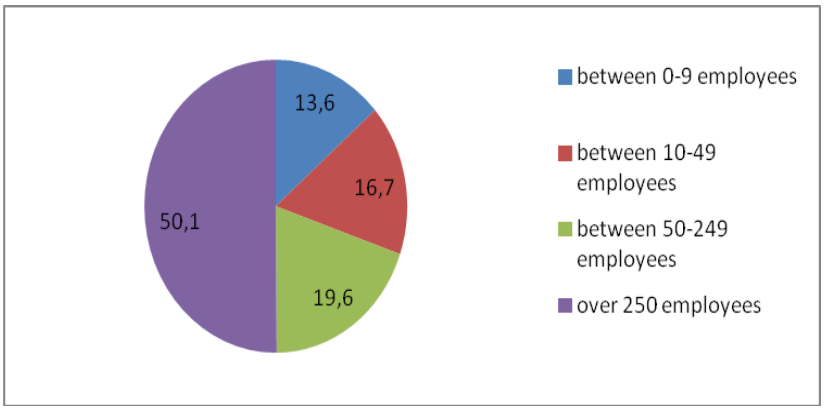


Figure 6. Structure of gross value added according to the size of companies(2014)
Source: European Commission. Eurostat

4. Conclusions.

In Europe, the increasing engine of the number of jobs is represented by SMEs, and our country is an economy dominated by the category of micro-enterprises. The poor performance of SMEs regarding the number of companies and employment after 2010 may be the consequence of numerous factors, first of them being the difficult access of SMEs to funding, the SMEs being more dependent on funding from foreign sources, mainly bank funding. So far, in many member states the credit capacity of the sector of non-financial companies remained weak, the factors of offer and request being explicative elements. On the side of the offer, it can be mentioned the restructuring of the financial and banking sector and financial disintermediation that occurred as a result of the crisis.

Taking into account the above mentioned, this analysis demonstrates that the development and the performances of the SME sector have an important relevance both for the improvement of living conditions and also for the increase of social cohesion among the population.

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Closing the FDI gap in CEE countries. The example of Bulgaria and Romania

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Abstract.
The aim of this paper is to assess the period needed for closing foreign direct investments (FDI) stocks gaps between Bulgaria, Romania against the rest of the new European Union (EU) countries. In this respect, we analyze the evolution of FDI in the two countries in the last two decades and during the economic crisis compared to the new EU member states in Central and Eastern Europe (CEE). The gap in FDI stocks between Bulgaria, Romania and the other states is still important, although the evolution of FDI inflows in the last years points to a restoration in attractiveness. For each country, we build three scenarios based on the FDI flows' annual growth rate in which we estimate the period needed for closing the gap in FDI stocks with Poland, the best performing economy in CEE. In order to reach the volume of FDI stocks in Poland, both countries need more than three years, in the most optimistic scenario.
Key words: foreign direct investment, FDI gap, Bulgaria, Romania.

1.Introduction

The recent economic and financial crisis has revealed several weaknesses of the economic structure in most countries of the world. Countries in Central and Eastern Europe (CEE) did not except from this rule. Beyond the negative effects, the crisis was also the starting point for structural reforms necessary for the economic recovery in these states. Both Bulgaria and Romania were among the countries that have implemented austerity measures and reformed various economic sectors. But was this enough for redressing their attractiveness for foreign investors? The increase in attractiveness for foreign investors was similar in the 10 new EU member states?

Bulgaria and Romania are strategically located in Europe in order to represent a favourable FDI location. Therefore, for determining their level of attractiveness for foreign investors, we analyze in this paper the evolution of FDI in Bulgaria and Romania over the past two decades and assess their position in the EU, as compared to the neighbouring countries. We are also interested in finding the time needed for closing the FDI stocks gap between these countries and the best placed economy in CEE.

The rest of the paper is organized as follows. The second part presents a brief literature review as regards the impact of the crisis on FDI, especially in CEE countries. The third part examines the evolution of FDI flows and stocks in Bulgaria and Romania compared to the other eight countries that joined the EU in 2004 and 2007. In the fourth part, we identify the time period necessary for FDI stocks in Bulgaria and Romania to catch up with the best performing economy in this group of countries. The last part presents the main conclusions.

2. The impact of the economic crisis on the attractiveness of CEE countries for FDI

The empirical studies on the impact of the crisis are still scarce, due to the fact that econometric methods are difficult to be applied on a short period of time.

[1] analyze the impact of the economic crisis on FDI in the CEE countries that are members of the EU. Using a panel data approach, the authors find a significant negative impact of the crisis on FDI, expressed as percentage of GDP.

[2] confirms the strong negative impact of the financial and economic crisis in 148 developing countries. Based on the empirical analysis, the authors show that FDI flows tend to decrease in the subsequent years after the crisis, while in the year before the emergence of the crisis, FDI experienced an increase. This result is confirmed also by the UNCTAD report [3], which states that 2008 was the year that marked the closing of an increasing FDI cycle at international level.

[4] test the impact scale of the recent economic crisis on FDI as compared with previous crises. The authors conclude that FDI inflows in developing countries are hardly recovering after the economic crisis of 2008. The impact of the current crisis on FDI is higher as previous crises were manifested individually, at country level, while the recent crisis is a global one.

[5] points to a significant decline of FDI in Bulgaria in the sectors sensitive to the business cycles, such as chemicals, intermediate goods, professional equipment and the automobile industry. The FDI in the other type of sectors, less sensitive to the crisis, could not compensate this strong negative impact.

[6] investigates both the impact of EU accession on FDI and the way in which investments have been affected by the economic crisis in Romania. The author points to an increase in Romania's attractiveness for foreign investors after joining the EU and a strong negative impact of the financial crisis. FDI flows return on a positive trend towards the end of 2011.

The negative impact of the crisis on foreign investors could also be seen from studies testing for a correlation between the evolution of FDI and the GDP. Several studies point to such a positive correlation, as foreign investors in these countries were mainly market-seeking. For example, [7] identify a statistically significant positive relationship between FDI and the real growth of GDP in the period 1990-2013, using an ARMA model. In the crisis, the relationship between the variables mentioned above indicates that a decrease of the economic growth, as experienced by Romania, would lead to negative evolution of foreign investments. [8] also finds a positive relation between FDI flows and the GDP volume in CEE countries during 1996-2009. The result is confirmed by [9], who find a positive relationship between FDI flows and GDP per capita during 1996-2010 in 26 European countries.

Through this paper, we will assess the position of Bulgaria and Romania as compared to the rest of the EU neighbouring countries and to expand FDI analysis for taking into account the economic crisis.

3. The evolution of FDI in the CEE countries. Focus on Bulgaria and Romania

For this chapter, we preferred to use the data provided by UNCTAD, as these are available until 2013. The data on FDI flows and stocks are adjusted with inflation in order to be comparable to those in 2013.

FDI flows in Romania represented 3.6 bn. USD in 2013, the second highest value among the new EU member states, after the Czech Republic (Table 1), while Bulgaria is on the fourth place. The evolution is favourable for Romania, the second in the preference ranking of investors, but occurs on behalf of significant divestments in Poland. In 2013, both Bulgaria and Romania started to capture again the investors' attention, as in 2007 and 2008, after some less favourable positions in 2011 and 2012.

Table 1. The evolution of real FDI flows, million USD

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Bulgaria	15860.1	11229.7	3754.2	1650.6	1920.6	1387.5	1450.4
Czech Republic	12156.8	7061.4	3171.0	6556.9	2427.9	8097.4	4990.4
Estonia	3459.7	1997.5	2124.7	1792.5	363.7	1559.0	949.8
Hungary	5114.3	7721.6	2336.5	2458.9	6761.4	14225.7	3091.1
Latvia	2928.7	1378.4	99.2	405.0	1498.5	1109.1	808.3
Lithuania	2566.0	2255.2	-15.1	867.4	1508.4	707.6	531.1
Poland	28488.3	17224.7	14462.6	15127.4	21561.4	6118.7	-6037.7
Romania	13625.1	17710.5	5841.9	3342.0	2710.1	2857.6	3616.8
Slovakia	4706.2	5452.2	-6.7	1932.1	3667.8	2865.5	591.0
Slovenia	1746.8	2126.3	-712.9	382.7	1041.6	-60.5	-678.6
Bulgaria place	2nd	3rd	3rd	7th	6th	7th	4th
Romania place	3rd	1st	2nd	3rd	4th	5th	2nd

Source: UNCTAD data; the author's calculations

The evolution of flows is generally marked by a strong annual fluctuation; therefore we also presented the annual growth rate of FDI inflows in Table 2. It is important to notice that until now, none of the analysed countries register flows comparable in volume with the level that entered in their countries before the economic crisis, in 2007 and 2008. Romania is the only country where an increase in FDI flows could be observed in the last two years, while in Bulgaria, only in 2013 the FDI inflow is higher than in the previous year. Although the increase is slight, Romania seems to have regained the confidence of foreign investors. In fact, if we look at the growth rate of FDI inflows, Romania, Hungary and Slovenia are the countries in which FDI flows have increased in most years (in half of the analyzed years, FDI flows are increasing compared to previous years).

Table 2. The evolution of FDI flows' annual growth rate

	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**% change in 2013 as compared to:**	
							2007	**2008**
Bulgaria	-29.2	-66.6	-56.0	16.4	-27.8	4.5	**-90.9**	**-87.1**
Czech Republic	-41.9	-55.1	106.8	-63.0	233.5	-38.4	**-58.9**	**-29.3**
Estonia	-42.3	6.4	-15.6	-79.7	328.6	-39.1	**-72.5**	**-52.5**

Hungary	51.0	-69.7	5.2	175.0	110.4	-78.3	**-39.6**	**-60.0**
Latvia	-52.9	-92.8	308.5	270.0	-26.0	-27.1	**-72.4**	**-41.4**
Lithuania	-12.1	-100.7	-5851.4	73.9	-53.1	-24.9	**-79.3**	**-76.4**
Poland	-39.5	-16.0	4.6	42.5	-71.6	-198.7	**-121.2**	**-135.1**
Romania	30.0	-67.0	-42.8	-18.9	5.4	26.6	**-73.5**	**-79.6**
Slovakia	15.9	-100.1	-28936.2	89.8	-21.9	-79.4	**-87.4**	**-89.2**
Slovenia	21.7	-133.5	-153.7	172.2	-105.8	1021.9	**-138.8**	**-131.9**

Source: UNCTAD data; the author's calculations

The situation of FDI is different if we analyse the stocks. Romania, Lithuania and Hungary form the group of countries where FDI stocks have failed to meet or to exceed the volume registered in 2007, according to Table 3. Moreover, although Romania is comparable in size with Poland or Hungary, the stocks of 84.6 bn. USD are almost 3 times lower than in Poland, 1.3 times lower than in Hungary and 1.6 times below the Czech Republic. In contrast, stocks of FDI in Bulgaria are continuously increasing since 2011; moreover, FDI stocks are in each year higher than the level registered in 2007. In fact, Bulgaria is the country with the second highest increase of FDI stocks in 2013 as compared to 2007, after Poland.

Table 3. The evolution of real FDI stocks, million USD

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**% change 2013/2007**
Bulgaria	48.6	50.2	54.6	51.1	49.2	49.7	52.6	8.4
Czech Republic	130.8	123.9	136.3	137.2	126.3	138.4	136.0	3.9
Estonia	21.3	18.9	19.4	18.7	18.1	19.9	21.5	0.5
Hungary	123.6	107.4	115.7	101.4	91.8	105.3	111.0	-10.2
Latvia	13.7	12.6	12.2	11.5	12.4	13.6	15.7	14.5
Lithuania	19.2	14.9	14.5	14.4	14.9	16.2	17.0	-11.1
Poland	215.7	190.7	207.1	235.1	212.4	237.4	252.0	16.8
Romania	86.5	86.5	86.8	79.9	76.7	81.1	84.6	-2.2
Slovakia	55.9	56.5	57.9	54.9	54.6	56.6	58.8	5.3
Slovenia	16.6	17.2	16.6	15.5	15.8	15.7	15.2	-8.1

Source: UNCTAD data; the author's calculations

In order to avoid flawed comparison due to assessing only nominal values, we will also compare the value of stocks per capita. From this perspective, Romania is ranked the worst among the analyzed countries, with a stock of FDI per capita of only 3,900 USD in 2013, as in 2007 and 2008 (see Table 4). The FDI stocks assigned to a Bulgarian are 87% higher than those assigned to a Romanian. Interestingly, the ranking is led by one of the smallest countries in our analysis, namely Estonia. Each Estonian has a FDI stock of 16,700 USD. This means that Estonia is highly intensive in attracting FDI. For Bulgaria, again, the level of FDI stocks per capita is higher in each of the analysed years as compared to 2007. The level of FDI stocks per capita in Bulgaria is comparable with the one in Slovenia, Latvia and even Poland, according to table 4.

Table 4. The evolution of FDI stocks per capita, thousands USD

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Bulgaria	6.4	6.7	7.3	6.9	6.7	6.8	7.3
Czech Republic	12.7	11.9	13.0	13.0	11.9	13.0	12.7
Estonia	16.3	14.5	14.9	14.4	14.0	15.4	16.7
Hungary	12.3	10.7	11.5	10.1	9.2	10.6	11.2
Latvia	6.3	5.9	5.8	5.5	6.0	6.6	7.6
Lithuania	6.0	4.7	4.7	4.7	4.9	5.4	5.7
Poland	5.6	5.0	5.4	6.2	5.6	6.2	6.6
Romania	3.9	3.9	4.0	3.7	3.5	3.7	3.9
Slovakia	10.3	10.4	10.7	10.1	10.0	10.4	10.8
Slovenia	8.2	8.5	8.1	7.6	7.7	7.6	7.4

Source: UNCTAD data; the author's calculations

A similar result for Romania is reported for FDI stocks as percentage of GDP. While FDI stocks in Romania in 2013 do not cover even half of the GDP, the amount of Bulgaria's FDI stocks is almost as high as the GDP (see Table 5). A positive evolution in Romania is represented by the increase with 23% in FDI stocks as percentage of GDP in 2013 as compared to 2007, and with 10.6% higher in Bulgaria.

Table 5. The evolution of FDI stocks as % of GDP

	2007	2008	2009	2010	2011	2012	2013	% change 2013/ 2007
Bulgaria	90.1	85.0	101.4	99.0	88.5	96.6	99.6	10.6
Czech Republic	62.3	50.2	63.8	64.7	55.8	69.5	68.6	10.1
Estonia	76.2	69.0	86.6	87.7	75.2	86.5	87.7	15.0
Hungary	70.2	57.1	78.0	71.2	62.2	83.1	85.6	22.0
Latvia	37.8	34.5	44.9	44.6	42.5	47.8	50.6	33.7
Lithuania	38.3	27.3	35.7	36.2	33.1	37.9	37.1	-3.1
Poland	42.0	31.0	43.0	45.9	39.4	48.0	48.8	16.3
Romania	36.9	33.2	43.8	42.6	39.1	46.1	45.4	23.0
Slovakia	63.6	53.5	60.2	57.7	54.2	61.1	61.5	-3.4
Slovenia	30.4	28.9	31.1	31.1	30.2	34.1	32.5	7.1

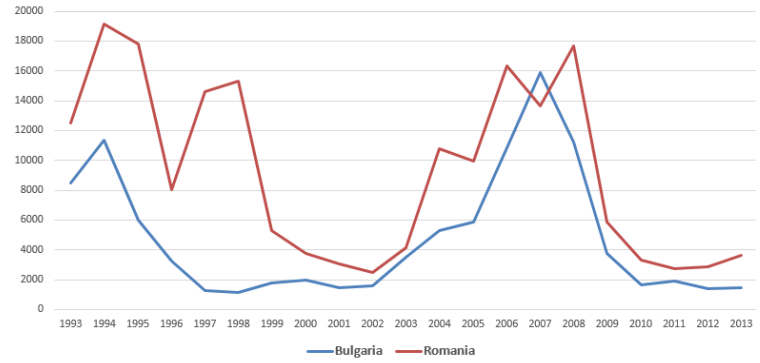
Source: UNCTAD data; the author's calculations

The evolution of FDI flows and stocks in Bulgaria and Romania during 1993-2013

The interest of foreign investors was more focused on the Czech Republic and Hungary at the beginning of the 90 decade [10]. [11] emphasize that Bulgaria and Romania were considered "less favoured regions" as FDI locations, according to the Greek investors.

Still, in the period 1994-1997, Romania is characterised by an oscillating flow of FDI, with high increases and decreases, while the FDI flows in Bulgaria are steadily decreasing (Graph 1). Some of the reasons for the low flows of FDI in Bulgaria at the beginning of transition could be seen in the low GDP and a high level of inflation (Gradeva, 2010), and in the "extreme economic and political instability" ([12], p.75).

Graph 1. Evolution of FDI inflows in Bulgaria and Romania during 1993-2013



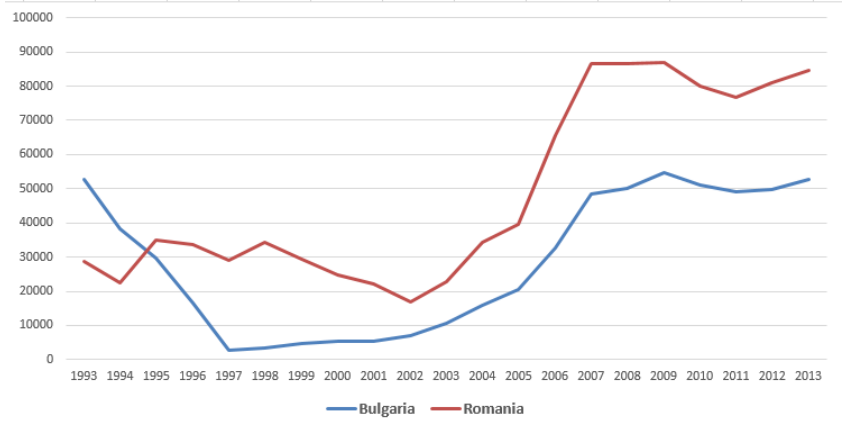
Source: UNCTAD data; the author's calculations

The evolution of FDI flows in Bulgaria was characterised by a steadily decrease until 1997-1998; two major operations were registered in 1997 - the implantation of a chemical industry firm and a copper production company in Bulgaria [13]. Since then, other FDI flows were favoured by the possibilities of privatization in Bulgaria and a more stable economic environment. In Romania, foreign investors were influenced, in the first part of the 90's, by the favourable regulatory framework, but with a reduced offer of privatization; in the period until 2000, the legislative framework became obsolete, while the privatisation offer increased [14].

Since the beginning of 2000s, the governments in CEE countries started to focus on attracting foreign investors [15]. The macroeconomic environment was also improved by the prospects of EU adhesion. Therefore, starting with 2002-2003, the evolution of FDI in Bulgaria and Romania is relatively similar, as can be seen in Graph 2. In Romania, the evolution of FDI stocks is relatively constant until 2002. Starting with 2003, the

significant FDI inflows contribute to a strong increase in stocks, while the economic crisis had a negative on stocks' volume. The same is available for Bulgaria.

Graph 2. Evolution of FDI stocks in Bulgaria and Romania during 1993-2013



Source: UNCTAD data; the author's calculations

Based on the evolution of stocks and flows, the 1993-2013 period can be divided into two major periods: the first period covers the years 1993-2002 and is characterized by a relatively constant evolution of stocks. The second period covers the years 2003-2013, with an important increase in FDI stocks and the impact of the economic crisis.

For a more detailed analysis, the FDI evolution during the last two decades in Bulgaria and Romania can be divided into four sub-periods (Table 6):

- In the period 1993-1998, the evolution in the two countries is divergent: while Romania seems to be attractive for foreign investors in this period of transition, Bulgaria has a negative evolution of FDI. Bulgaria sees a dramatic decrease of FDI flows, with almost 94% in 1998 as compared to 1993, due to an average decrease of FDI flows of 28.6%. Romania has a positive, still weak evolution, characterized by a low growth in FDI stocks and an oscillating evolution of FDI inflows. Stocks of FDI increased by 19.5% in 1998 as compared to 1993, while the average annual growth rate in FDI inflows during these six years is only 2.02%. The trend in both countries is reversed in the following period.
- In the period 1999-2002 we see a totally opposed situation both as compared to the first period, and between the countries. This time, Bulgaria is in the foreign investors' preferences, as the stocks of FDI increase with almost 50.5% in 2002 as compared to 1999. The average rate of FDI flows increase is almost 11% in this period of four years. In Romania, both FDI inflows and stocks are decreasing. FDI flows are steadily declining, but with an increasingly smaller rate. FDI flows are annually declining with a rate of 33.2%. This decrease contributes to the drop by 42.4% of FDI stocks in 2002 compared to 1999.
- Finally, in the period 2003-2009, the evolution of FDI flows and stocks in both countries follow the same trend of increase. Bulgaria performs better in terms of attracted flows. The significant inflows of FDI in the two countries mean an increase by 3.8 times of FDI in Romania and of over 5 times in Bulgaria. The medium average growth rate for FDI flows in the 6 years is of 33.16% in Romania, better than the 31.54% in Bulgaria.
- The period 2010-2013 is marked by the impact of the economic crisis. FDI flows decrease with a medium average rate of 7.4% in Romania and with an almost double rate, of 15.72% in Bulgaria. Interestingly, FDI stocks are increasing in Bulgaria and are almost 3% higher in 2013 as compared to 2010 and dropping with 6% in Romania in the same period.

Table 6. Evolution of FDI flows and stocks in Bulgaria and Romania in four sub-periods

FDI	Bulgaria		Romania	
	Flows evolution	Stocks evolution	Flows evolution	Stocks evolution
1993-1998	-28.61%	-93.39%	2.02%	19.5%
1999-2002	10.95%	50.47%	-33.2%	-42.4%
2003-2009	31.54%	5.15 times higher	33.16%	3.8 times higher
2010-2013	-15.72%	2.92%	-7.4%	-6%

Source: the author's calculations

4. The period needed for Bulgaria and Romania for closing the gap in FDI stocks.

Two observations can be drawn from the above comparison:

- The gap in FDI stocks between Bulgaria and Romania and the rest of the CEE countries is still high.
- The performance in FDI inflows is somehow better, suggesting a higher attractiveness of the two countries for foreign investors.

Therefore, when can be closed the gap between Bulgaria/Romania and the rest of the CEE countries? To answer this question, we have taken the following approach: given the current volume of FDI stocks in Bulgaria and Romania in 2013, we were interested in assessing the period in which could be closed the gap between these countries and Poland – the best performing country in FDI stocks. It is important to establish, in this context, which is the FDI annual growth rate. Therefore, based on the evolution of FDI in Bulgaria and Romania, we created three scenarios:

- FDI flows are increasing at a low rate, with an average growth rate (AGR) of 10.95% in Bulgaria, as during 1999-2002 and of 2.02% for Romania, as during 1993-1998.
- FDI flows are increasing at a medium rate, with an AGR of 14.35% in Bulgaria and with 18.4% in Romania, similar for the period 2003-2013.
- FDI flows are growing fast, with an AGR of 31.54% in Bulgaria and 33.16% in Romania, similar for the period 2004-2009.

The growth rate stated above was calculated based on annual growth rates of FDI flows. To identify the period required for closing the gap, we use the following formula

$$Stock_t = Stock_{t0} *(1+AGR)^n \quad (1)$$

where $Stock_t$ represents the benchmark, namely the volume of FDI stocks registered in Poland in 2013, $Stock_{t0}$ is the volume of FDI stocks in 2013 in Bulgaria and Romania respectively, AGR is the medium average annual growth rate in FDI and n is the number of years needed for n reaching the benchmark.

The calculations based on the above formula indicate that Bulgaria needs:

- Almost 15 years for the volume of FDI stocks to reach the level established by Poland in 2013 if the medium increase rate for FDI flows is almost 11%.
- 12 years (11.68 years) if the AGR is of 14.35%, as the one registered by Bulgaria in 2003-2013.
- 5.7 years if FDI flows increase significantly, with an annual average of 31.54%.

Likewise, Romania needs:

- Over 55 years (55.13 years) for the volume of FDI stocks to reach the benchmark if the AGR of FDI flows is around 2%;
- 6years and a half if FDI flows rose moderately by 18.4% per year.
- 3.8 years for the stock of FDI to reach the actual volume in Poland, if FDI inflows have a sharp increase, growth with an AGR of 33%;

The results are summarized in Table 7.

Table 7. Number of years necessary for Bulgaria and Romania to catch up Poland

Bulgaria		**Romania**	
Annual average growth (%)	Number of years necessary (years)	Annual average growth (%)	Number of years necessary (years)
10.95	15.07	2.02	55.13
14.35	11.68	18.4	6.46
31.54	5.7	33.15	3.8

Source: the author's calculations

It should be noted however that the gap between Bulgaria/Romania and Poland will persist because Poland's stocks will also grow in this period. However, the growth rates we used are viable, being experienced by Bulgaria and Romania during the two decades of analysis. Romania and Bulgaria should take into account the need for building attractive policies for increasing their FDI inflows – a fact that was emphasized in several other studies ([16], [17]) but also to emphasize the 'entrepreneurial' type of business culture, which is currently in the process of formation (18). At their turn, companies should adapt their leadership style to the conditions in each country in order to obtain more performances and increase their outcomes (19).

5. Conclusions

The objective of this paper is to identify the evolution of Bulgaria and Romania's attractiveness for foreign investors. Based on the analysis of FDI flows and stocks in the 10 new EU member states, we placed the two countries in the regional competition. Although the two countries are behind other similar neighbouring economies, the experience of the last years points that their attractiveness for foreign investors is restored.

In this context, we estimated the period required for Bulgaria and Romania to reach the level of Poland as regards the volume of FDI stocks. We built three scenarios, based on the growth rate of FDI inflows recorded in various periods in the two countries. Thus, if FDI flows have a modest increase, Bulgaria needs 15 years and Romania 55 years to achieve the level of Poland; at a moderate growth rate, almost 12 years are needed for Bulgaria and over six years for Romania, and if FDI flows are growing fast, as in the pre-crisis period, Bulgaria needs 6 years, while Romania only 3.8 years. The results indicate the important need for public measures in order to attract foreign investors in Bulgaria and Romania.

6. Acknowledgement

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Success or failure? The leadership style of the Romanian and Austrian leaders. A comparison based on the Vroom/ Yetton mode of leadership and decision making

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Abstract.

Organizational culture is an important driver of organizational performance, and organizations with effective work cultures are more likely to perform well on international markets. The aim of this paper is to identify to what extent the cultural factor affects the decision making process within two European countries, namely Austria and Romania. Taking into account the diversity of the leadership systems, we apply the Vroom/Yetton model of leadership and decision making in order to explain the dissonance and the consonance in the behavior of the Romanian and Austrian managers. Based on this model, we search for empirical evidence as regards the leadership style of the managers from the two countries and the impact of the intercultural determinants on the competitiveness of the organizations. While the dissonance is expressed in cultural differences, there is consonant policy as regards the new business opportunities.

Key words: organizations, leadership styles, decision making, organizational culture.

1.Introduction.

Globalization and internationalization are enhancing and more and more various standards are becoming internationally implemented. The key success factors for international cc-operations are the knowledge of the national peculiarities and traditions, the understanding of the heritage and the historical and economic background. In this respect, leaders must overcome the conflict between the desire to put into practice standards which are internationally valid and the requirement to act according to the local specificity in terms of organizational structures, leadership styles and marketing approaches as well. Taking into account all these we are interested to see if there is a decision making plan which can be applied in order to enhance the cooperation between the two types of leaders. We start from the assumption that the decision making and the leadership style is exhibited by the individuals who lead in a manner which reflects the cultural nuances, sensitivities and values, and they try to establish a meaning for their subordinates as well. In this respect we review the literature and aim to provide a comprehensive description of the most important results.

The paper has the following structure: in the second part we highlight the cultural dimension of the business organizations. The Vroom/Yetton model of decision making and leadership is presented in the third part. The fourth part brings empirical evidence regarding the decision making process of the leaders from the two countries in question. We conclude with some insights meant to emphasize the main findings of the paper.

2. The Cultural Dimension of the Business Organizations.

The variations in leadership styles are due to different cultural patterns because people have different beliefs and perceptions as regards the characteristics which are considered effective for leadership. Therefore, it is essential to have a deep understanding and knowledge of the cultural setting. This information is of highly importance as it offers insight into developing competences in different workplaces, namely in the organizations which enter into international markets.

There are clear differences between the cultures in terms of values, attitudes and behaviors of the individuals and this dissonance has implications at the level of the decision making process and leadership within organizations. Therefore, adjusting to the conditions of the new environment includes the internal integration and socialization between the members of the organization, managing relations among them and developing optimal decision making processes. Faced with these challenges, the organizations develop a set of preferences that form their value culture [1]. Culture is embedded in the organization's history and structural relationships [2]. This idea is supported by [3] research which observes that the cultural characteristics and the organization are embedded in each other rather than existing as parallel but separate entities. [4] defines the organizational culture pointing out some characteristics. Thus, organizational culture is holistic, historically determined, related to anthropological concepts, socially constructed, soft and difficult to change. [5] names it a collective programming of the mind which differentiates the members of one organization from another. Therefore, there is a clear distinction between the 'software' of the national culture which is expressed in values and the 'software' of the organizational cultures which is expressed through practices.

[6] developed a model of cultural orientation of national groups which provides an indication on the organizational characteristics.

Firstly, the researchers state that the societal culture intermediates the relation between the individual and the group. People are considered embedded (embedded cultures) in collectivity which is characterized by values such as social order, respect for traditions, security and wisdom. In autonomous cultures there are two orientations. The Intellectual autonomy within which the individuals follow their own ideas independently guided by values as curiosity and creativity. The Affective autonomy within which individuals search for positive experiences for themselves, guided by values like pleasure and exciting life.

Secondly, it is very important to have a behavior which is socially responsible. This regulates the interactions between people and the way they manage their interdependencies. In hierarchy cultures there is an unequal distribution of power, roles and resources as legitimate and its values are authority, humility and wealth. The egalitarian dimension supports people to apprehend each other as equally moral; they share basic interests as human beings and value equality, social justice, responsibility and honesty.

Finally, the relation between humankind and the social world is mediated through mastery and harmony. Within the mastery dimension people are encourages to be self-assertive so that they control and change the natural and social environment in order to reach the personal or group goals. They rely on values like ambition, success, daring, and competence. The harmony dimension fosters the acceptance, understanding and appreciation of the world as it is, rather than changing or exploiting it. The values are unity with nature, protection of the environment, and the world at peace.

Figure 1 presents the three bipolar dimensions of "embeddedness versus autonomy", "hierarchy versus egalitarianism", and "mastery versus harmony" as proposed by [7] in their study on 76 national groups.

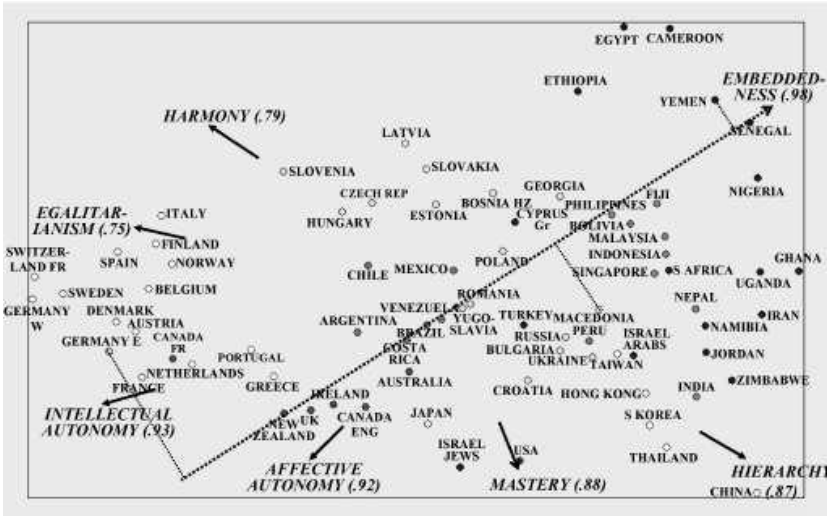


Figure 1: Sagiv and Schwartz's national groups and cultural orientations (Sagiv, Schwartz, 2007, p. 181)

As far as the consonance and the dissonance at the level of the two cultures which are the topic of our research, as presented in figure 1, we may see that Austria exhibits the following characteristics.

Austrian culture places an important emphasis on intellectual harmony and egalitarism. Less accent is put on effective autonomy. This means that there are lower levels of embeddedness and hierarchy. There is also a midway between harmony and mastery.

Considering Romania, we may observe that there is a combination between embeddeness and hierarchy as opposed to the Austrian culture. This is a characteristic of the former communist nations from the Central-Eastern European cluster. However, there is consonance between the two countries as Romania shows emphasis harmony and mastery at middle level.

3. The Vroom / Yetton model.

The Vroom/Yetton model[8] is made up of three elements which are interconnected within the theory of contingency. It states that there is no leadership strategy (style) which is successful in all situations, therefore the situations have to be diagnosed and we must find rules that explain which strategy is appropriate to every situation.

- Leadership strategies: According to the model, leaders may choose from five levels of participation when making a decision (AI, AII, CI, CII, GII). These strategies range from an autocratic decision (AI) to a total group decision (GII).
- Situational attributes: The leadership decision situation is characterized by seven attributes, which correspond to seven diagnostic questions. The seven questions rely on the assumption that leadership effectiveness is based on mastering two principle variables: LE=f (Q*A) where Q stands for quality and

A for Acceptance. Quality refers to a leader's competence as professional, with accent on knowledge, to meet the technical and task oriented demands of the goals of the organization.

- Decision rules: The model gives us seven decision rules each of them excluding each other in specific situations. The leader selects the most feasible strategy which provides the greater involvement of the subordinates in decision making and more opportunities to develop their own managerial, technical and team skills.

4. Empirical evidence regarding the decision making process of the Austrian and Romanian leaders.

In what follows we present some examples of the consonant and dissonant characteristics of the Austrian and Romanian leaders in terms of decision making strategies.

[9] reveal that Austrian leaders are reluctant in employing autocratic strategies for decision-making. They also show high level of participativeness in their leadership behavior. However in which leaders do not have enough (technical, professional) information, there is an inclination to become less participative.

Also, within the GLOBE team [10] carried out the research on Austrian leaders found out a preference for an increase flexibility and risk taking. They also found out a trend towards a more egalitarian society and the existence of a social partnership model which accounts for the low levels of assertiveness.

[11] underlines that Austrians expect and accept power relations which are more consultative and democratic. More, people relate to one another more as equals regardless of the formal positions. Subordinates are more comfortable with and demand the right to contribute to and comment on the decision-making process of those in power. Therefore, the subordinate-superior relations are pragmatic.

As far as the Romanian leaders are concerned the concept of organizational culture was at the focus of some empirical studies aiming at analyzing the process of transition from egalitarian type of culture to the one based on market economy values and the way decisions are made and implemented [12] [13]. In time the theoretical basis and research methodology were improved. The majority of studies from the years of transition show a preference of the CEOs and subordinates for a leadership style which tends to be autocratic [14].

The influence of the transition process, including the restructuring of the company and its culture, is seen as an important factor for both stability and change in leadership behavior in Romania as far as decision making is concerned [15].

A study much more informative (although comparative) is offered by [16], and focuses on the extent to which the leadership styles are observed by the top managers in order to comply to the regional and global expectations. The authors of the study are the first to notice the impact of the specific factors of an economy in transition on the leadership behavior of the Romanian managers and the emergence of a new generation of leaders, capable of implementing a transformational leadership culture.

Another important research is the [17] monography suggestively entitled 'Employeescu'. The research carried out by replicating Hofstede's study demonstrated that Romania has similar values with other Balkan countries, namely: high power distance, high collectivism, feminity, high uncertainty avoidance, short term orientation, in other words Romania, like other countries in the Balkans (Bulgaria, Greece, Serbia, Macedonia, Albania), places itself at the opposite side of the Anglo-Saxon countries, from which however, it borrows all the practices of the management and the human resources management as well. This triggers a potential for conflicts and failure which seems inevitable especially if the people within organizations did not become accustomed to the situation.

The CEO study which is a part of the GLOBE project [18] (den Hartog et all, 1999; House et all, 1999) looked at the leadership behaviors as perceived by subordinates and addressed also the Romanian leadership style. The sample was made up of 44 executives and 277 managers. The CEO study shared the main theoretical assumptions of the GLOBE project, leadership being seen as socially constructed by leaders and subordinates as well as by cultural assumptions on good and effective leadership. The study underlined the fact that Romanian leaders have more transformational characteristics such as vision- have a clear strategy, are diplomatic and have a communicative behavior. More, Romanian managers tend to be risk avoiding and act on short run as well.

These studies suggest a persistence of directive autocratic leadership style as well as changes towards the legal, materialistic and performance orientations. Both culture and transformational settings of the companies play an important role for explaining the stability versus the changing environment.

5. Conclusions.

Facing globalization, the consideration of this aspect of culture becomes increasingly important. Organizations that are able to align their cultures will be able to deal with the uncertainties and demands of the future more successfully. Organizations will most likely be able to meet their challenges and opportunities if their growing power is developed in collaboration with that of their workforce through performant decision making processes.

Organizational culture is an important driver of organizational performance, and organizations with effective work cultures are more likely to perform well.

The focus on organizational culture and decision making process is even more important in a country as Austria, is described by a collectivist society with a participative style of management. The employees in Austria prefer that their managers supervise, review and make them proud of their work.

Romanian managers have shown a high will and ability to learn and adapt their behavior patterns to the new social and economic environment of free-market economy with in a democratic society and within the EU-framework.

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The trade-off between the discipline and the economic growth process

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Abstract.
The aim of this paper is to analyse the trade-off between various measures of adjustment and correction needed in areas such as fiscal area, external area, etc. during economic crises and recession period and the economic growth objective which would imply countercyclical measures aimed to augment resumption of economic activity. Thus in this scientific article I wanted to realize a diagnostic analysis on the economic evolution of the last 15 years, the analysis focused on the compromise mentioned above and especially on cyclical and structural challenges that have a strong impact on the key macroeconomic variables in a country .
Key words: economic growth, macro stabilization policies, corrective mechanisms.
JEL classification: E 60, E 61, G28;

1. Introduction.

After a serious international crisis, cases of interrupted reform and instances of macroeconomic mismanagement (pro-cyclical fiscal policy, inadequate labor market legislation, etc.) as well as non-sustainable growth premises, Romania has experienced a severe economic downturn. The success of some critical reform which should be market oriented are now once again required. In this context, it is necessary to reassess the growth performance of the country and of the entire zone, determine and understand the sources of economic growth and design a clear and coherent strategy for further reforms.

Studies from topic related literature (Loayza, Fajnzyber, Calderon, 2005) demonstrate that structural factors such as human capital, financial depth, public infrastructure and low government burden have a positive impact on sustainable growth process. Also show that macroeconomic instability (high and volatile inflation and real exchange rate misalignment, etc.) and long run growth are inverse correlated and that external shocks (for instance terms-of-trade or capital flows shocks) have a significant negative impact on economic growth.

Central questions surrounding economic growth in Romania:

- Is physical capital investment crucial for triggering growth?
- Is either investment or total factor productivity responsible for the major shifts in economic growth?
- What is the role of structural and stabilization policy reform in such turbulent economic environment?
- To what extent can business cycle movements and shifting external conditions explain the patterns of fall and recovery?
- What is the country's growth potential?

During 1993-1999 reality shows that capital stock had a positive contribution to economic growth (which was in average 1.2 per year) while TFP and human resources had a negative impact.

During 2000-2004, the economic growth rate was in average 5.4% which is explained by a positive contribution of capital stock and TFP; the contribution of human resources was still negative

Between2005-2008 the economic growth rate registered in average 6.4% and capital stock was the main contributor.

Starting with 2009 the macroeconomic situation deteriorated a lot, registering a real growth rate of -7.1% but with policy measures and IFI's help things.

Items that have led Member States to sign programs with International Financial Institutions were different, starting from balance of payments difficulties to excessive sovereign debt and banking crisis. In this context , the IMF used specific instruments for balance of payments difficulties (especially Stand -by Arrangement), releasing the amounts necessary to reconstitute the countries' foreign exchange reserves , thus able to cope with capital outflows without triggering a currency crisis or balance flat or without currency depreciation and stopping payments. This was the case in Hungary , Romania , the Baltic countries.

The recovery and the macroeconomic evolution between 2009-2014 will be further analysed.

2. Macroeconomic evolution in Romania.

After seven years of high growth rates Romania registered a significant real GDP decrease with a peak of -7.1% in 2009 (Figure 1). After 2 years of negative economic growth rates, Romania rebounded well from the economic crisis with a growth rate of 1.1 percent in 2011, due to macro stabilization policies and IFI's help. Romania had the most drastic fiscal adjustment during programs in comparison with similar countries in the region. The structural deficit improved by 5.5 percentage points of GDP in 2009-2011. Romania had but the

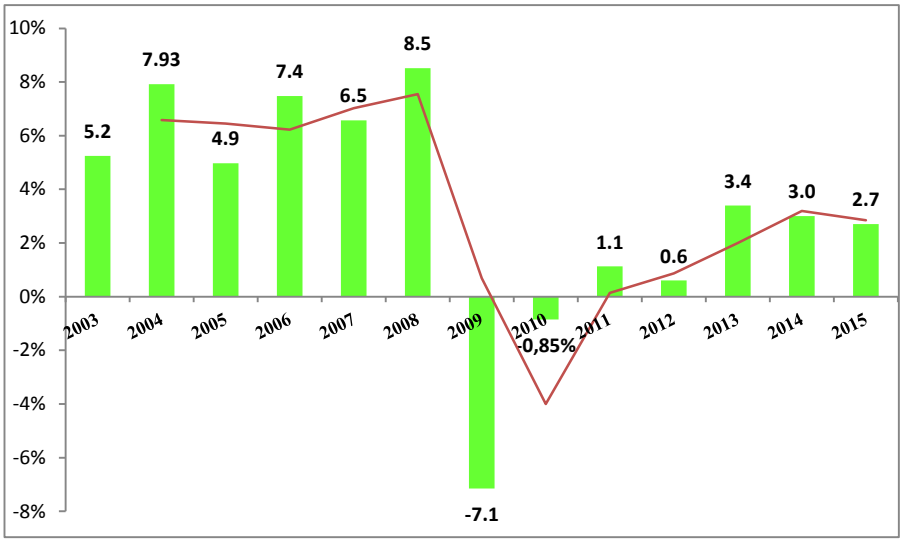
weakest starting position, with a structural deficit of -9.5 % of GDP unsustainable in 2009, generated highly pro-cyclical fiscal policy during the years of growth from 2004 to 2008 .

The recovery was led by a rejuvenated manufacturing sector, which contributed towards export growth, and a strong performance from the agricultural sector. Romanian growth remained fragile and easily swung with external factors.

Economic recovery started in 2011 was accompanied by a change in the composition of growth, which began to rely on healthy elements, namely investment and continued growth in exports.

Still, growth reached a 0.6 percent in 2012, having been restrained by a mixture of domestic and external developments. A harsh winter at the start of the year hit the transport, mining and manufacturing sectors as well as retail. A drought resulted in a poor harvest, which knocked an estimated 0.5 percentage points off growth compared with an average harvest. The poor economic performance in the EU, which accounted for 70 percent of Romania's goods exports in 2012, resulted in relatively flat exports in the year. The most important decrease of the volume of activity was recorded by Agriculture, forestry and fishing (-21.2%), by Industry (-2.1%) and by Financial intermediation and insurance (-0.2%).

Figure 1: Real Growth Evolution between 2003 – 2015



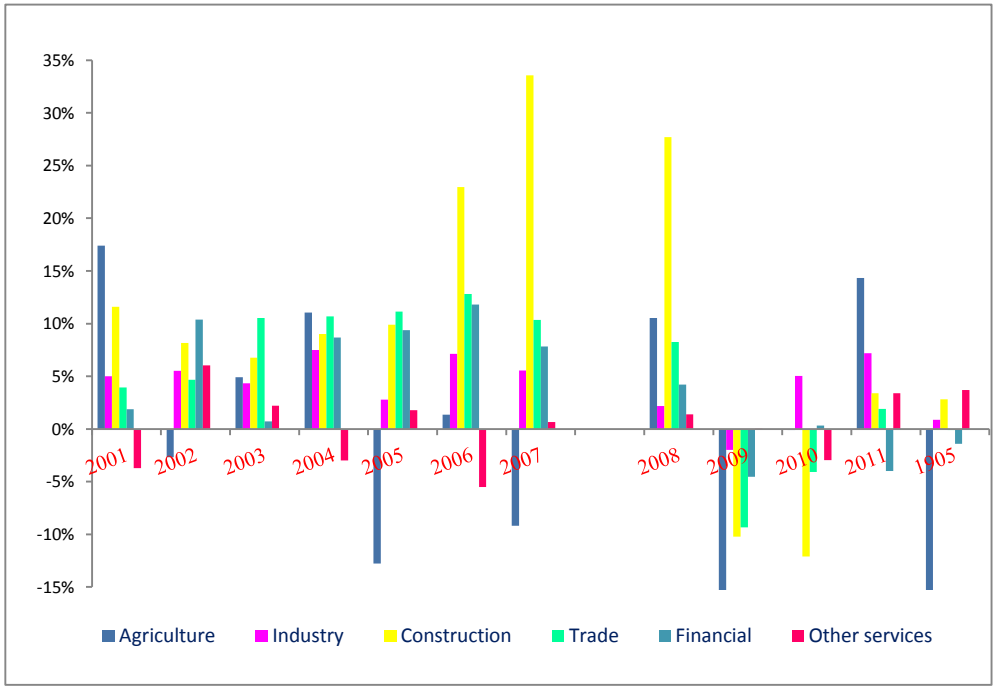
Source: Self calculation based on Eurostat data

After positive growth in the Q2, Romania contracted by 0.3 percent (q/q) in the Q3 and turned to a low positive value of 0.4 percent in Q4 of 2012. The contraction was driven by a poor agricultural harvest (a result of drought). This places annual growth at a modest level of 0.6 percent. Industrial indexes suggest some sectors performed well during the year, notably durable goods, car parts and information technology.

However, industrial production as a whole remains flat (driven by the performance of large industries, such as power generation) and is unable to compensate for the poor agricultural output. In 2013 and 2014 the growth process was more evident registering 3.4 percent respectively 3.0 percent (Figure2). Exports and internal demand were the main drivers but in spite of the real growth rate registered, credit, foreign direct investments and some other variables didn't perform well.

The current account has been rebalancing, even is in 2013 there was a deficit. This small deficit is expected to increase in the next years due to a stronger internal demand which will lead to a bigger demand for imported goods. FDI remains very weak at a level below 2 percent of GDP.

Figure 2: GDP Growth by Components (production side), annual % change

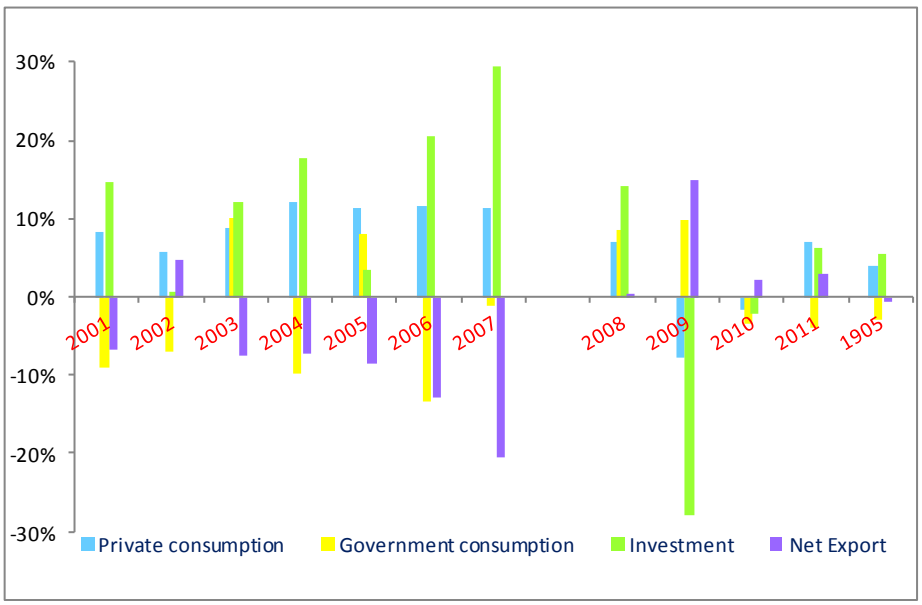


Source: Self calculation based on Eurostat data

The most important decrease of the volume of activity was recorded by Agriculture, forestry and fishing (-21.2%), by Industry (-2.1%) and by Financial intermediation and insurance (-0.2%). The volume of net taxes on products increased by 3.7%. In 2012 total final consumption increased by 0.9% as compared to the previous year, on behalf of the increase by 0.6% of the final consumption expenditure of households and by 1.9% of the final consumption expenditure of government. Gross fixed capital formation recorded an increase, by 4.0 percentage points.

From the expenditure side components (Figure 3), Investments and net exports had a high volatility. After 7 years of negative contribution with large current account deficits, Net exports had a positive contribution in 2009-2011. In 2012, due to a slight increase in internal demand the net export had a negative impact to growth rate of about -0.7%.

Figure 3: GDP Growth by Components (expenditure side), annual % change



Source: Self calculation based on Eurostat data

Since spring 2009 Romania has had financial assistance from International Financial Institutions. The first two agreements were Stand-By and the next one was a Precautionary one which is set to end by September 2015.

Sovereign funding on the markets was completely restored by mid-2011, so were extended maturities of government securities issued by the MFP. International markets were well capitalized. Romania's international visibility has been enhanced by its inclusion in JP Morgan and Barclays indices for emerging markets since March 2013. In addition, fiscal consolidation has helped reduce the structural public financing needs.

Even if the current account, the fiscal deficit, etc. had some important correction, the surveillance of imbalances was still an important task. However, on the ongoing arrangement, there were some negative factors and no review of the program has been successfully completed.

3. Conclusion.

Descriptive tools are very important in order to analyze sources of growth which decomposes output growth into pre-identified sources. Also this tools permit to clearly see the long-run sources of growth and growth accounting represents one of these scientific instruments.

As recommendations, Romania should increase the stock of foreign capital and this could be done by:

- Macroeconomic balance preservation
- Reduction of bureaucracy regarding structural funds absorption, business environment, etc.
- Appropriate privatization of certain parts of state own companies

The perspectives for 2015 are positive. Taking into consideration the good evolution of some key macroeconomic variables (as an example the FDI which almost doubled compared to the value correspondent to the same period last year) in the first quarter of the current year and also the business environment perception the growth rate is expected to register at least 2.7%.

4. Acknowledgments.

This work was co-financed from the European Social Fund through Sectorial Operational Program Human Resources Development 2007-2013, project number POSDRU/159/1.5/S/134197 „Performance and excellence in doctoral and postdoctoral research in Romanian economics science domain".

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The Synergy between Business Intelligence and Big Data – lowering the gap between the Future and Present Day

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Abstract.
The knowledge and the information economy are part of the 21st century Economics. Business Intelligence and Big Data working together will result in the synergy of facts, global facts that now could be forecasted. The autonomous forecast could represent the new breakthrough for statistics and economic development by creating an instrument for lowering the number of choices you have in developing a new path, because from those paths, when you filter them with the time factor, feasibility and financial determinant a limited number of choices would represent a competitive advantage by itself.
Key words: big data**,** business intelligence, synergy, dot.com bubble.

Introduction

In the year 1986 the price of a computer was of approximately 20 million USD, now being found 2.500 times faster and 30.000 times cheaper in the case of an iPhone 6, resulting in a 75 million times rise in processing power for every US dollar spent.

The chances that in the next 25 years the exponential growth will keep the same pace regarding also available technology at that time is valid from every point of view [1].

The Fringe between Man and Machine

These days, investments are massively targeted towards the Information Technology sector and for developing automated response systems for when in need, but a proactive workflow with tendencies to level any systemic irregularity before it could be conceived.

A century ago on the farm the tractor was used for the first time, and back then economists announced the tragedy: the unemployment will grow and the number of jobs in agriculture will decrease and automation will tip the balance towards the technical capital side, not the human capital one. Did that happen? No, actually there were created millions of new (types) of jobs.

Karl Marx foreseen the functional side of evolution and embracing it as a solution to get to future faster. Also, John Maynard Keynes saw the future, but path dependence was quite strong back then and he only highlighted the power of the future and its functional side, but wasn't able to describe it at its full potential.

The machine of the future, the one that is new on the farm it isn't the tractor, but the computer. Also like in physics, we are evolving from mechanics towards quantum physics and soon we will use quantum processing computers, but it would not create new jobs, this (r)evolution will consume jobs as we see them with our 2015 point of view, it will transform them and create new compensation paths for assuring a income for the unemployed of the future.

The biggest futurology expert of our time, Ray Kurzweil lately he made two statements: that till the year 2030 humans will be surpassed by Artificial Intelligence and until the year 2045 biological intelligence will auto-limit itself [6]. What does this mean for the actual way we approach Economics? It means that traffic controllers, taxi and truck drivers and waiters are the first in the automation process, they will be replaced by mechano-intelligent entities.

Successive recessions lead towards the replacement of labor with capital, but the issue arises from the fact that economic growth is reignited each time, the economic output re-enters its normal trend, the workflow or labor quantity decreases, this way jobs are lost for good.

Creative Destruction with a bit of Information Technology

Economists, starting from Joseph Schumpeter followed the scientific purpose of creating sustainable economic growth that could also be shifted towards emergent markets [4; 5]. Also Robert Solow followed the idea and created the theory that caught up momentum in the early '80s, but it was rapidly replaced by financial growth theories that sustain the idea that our economy could be developed by following the intangible side of the

economy, be it financial derivate, the service side of the demand or going further to the information economy that goes hand in hand with the knowledge society [1; 3]. All these are deeply segmented in the old school of economic thought reaching also the Austrian side of economic thought.

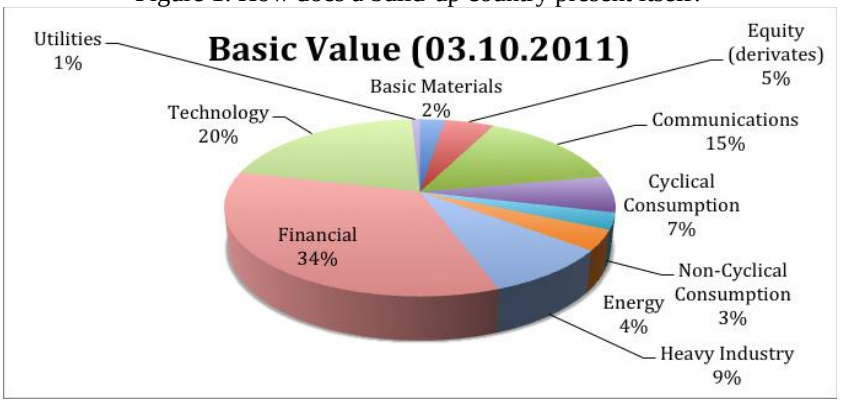
The intangible evolutionary component represents also the fringe and in the same time the acceleration towards the future: the need to ride the innovation wave for positioning human kind on the enlightened side of evolution, the side that allows lowering losses, decreasing the number of paths to follow developed at state, regional or union level (e.g.: infrastructure, recreating comparative advantages, creating competitive poles, etc.).

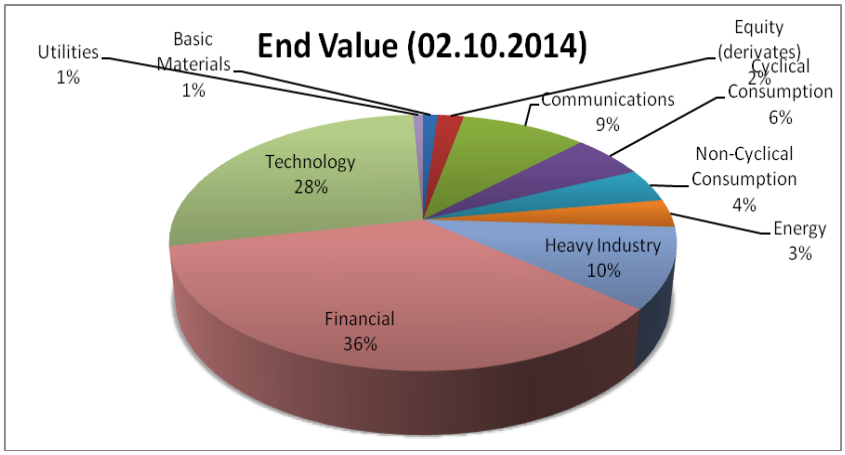
The Bright Side of the Economics

How could you develop a country in a functional manner and not by using unification processes, national consciousness and historical dependence?

Macroeconomic performance shows in a relative way how economic evolution is ignited in a country, but also the quality and life standard are important details in the path of development.

Figure 1. How does a build-up country present itself?





Source: own computations

From the graphs above we could see that in three years the functionally [2; 3] developed economy (country) evolved better than all economies worldwide (it almost doubled in volume), but in its sectorial evolution it did not move quite a bit when it comes to internal development. The only red light we could stress is the Technology sector that grew by 40% (from 20% to 28%, while the economy doubled in volume that means it grew actually in size by 2,8 times from the initial value of the sector, and all these in just three years. The pace of the technology sector represents an anomaly because all other sectors grew around 10% in three years when it comes to volume (2,1 times in financial value), which represents an ordinary pace. Another anomaly is the diffusing of the Communications sector, because it decreased from 15% to 9% in total volume, but because the economy doubled, it actually did not grew with the pace of the others, it grew only by 20% from the initial financial value.

Conclusion

Testing different models I realized that all hypothesis followed and the results obtained converge towards the idea of decision automation (not understood as taking a decision in an automatic manner through predetermined algorithms, but by stimulating the idea of accessing only some paths to follow and flow proactivity in the work process). Decision automation represents a normal step in the circuit of knowledge flow obtained in the quantic (r)evolution and by treating information not as a final good, but as an intermediary flow that could have a multitude of endings, everything depending of the user's purpose.

The feasibility of this concept is in flow state; during the research realizing that we are on the verge of a new dot.com bubble, which this time is not created by Wall Street or Silicon Valley, but by the Quantitative Easing procedures that injected (almost) free money in the global economy.

5. Acknowledgments.

This work was supported from the European Social Fund through Sectorial Operational Programme Human Resources Development 2007 – 2013, project number POSDRU/159/1.5/S/142115, project title "Performance and Excellence in Postdoctoral Research in Romanian Economics Science Domain".

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The Evolution of the Romanian Capital Market Regulation Post-Crisis

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Abstract.

This paper is primarily concerned with the role and influence the crisis has played in the development and/or modification of the regulatory framework for the capital market in Romania.

The previous time period has seen the capital market regulation in Romania characterized by two separate, although inextricably linked, processes that have occurred in our country over the course of the years prior to the crisis and have productively coexisted – the preparation for EU integration and the development of the infrastructure for the emerging securities market and of a regulatory framework to govern capital market transactions.

While the accession process from the regulatory point of view reveals that this process has largely focused on the formal adoption of EU legislation by Romania, and that the acquis communautaire in the securities field had been fully transposed, the degree of harmonization exceeding that of many of the EU 15 countries, the capital market in Romania was not prepared for any types of crisis, let alone one of such a magnitude.

Even though the oversight from the EU during the accession process played a key role in the establishment of a stronger securities regulator in Romania, the transposition process only served at superimposing the European regulatory platform over the Romanian national market, bringing along for the ride the same weaknesses – lack of early warning systems, micro and macro prudential policy, and so on.

This paper will attempt to present what regulatory additions and/or changes have been made to the national framework in the post-crisis era, and whether or not they were influenced or had anything to do with the crisis.

Key words: Capital Market, Regulation, Crisis, Role, Influence

Capital market, as an effective and self-sustaining struture, did not exist in the state-planned economy of Comunist Romania, nor immediately after the events of December 1989 and during the early years of the transition to a functional economy. Hence, there was effectively no knowledge of, or experience with, financial sector regulation and supervision in Romania at the start of the transition to a market economy[1]. Scholars and practitioners have concluded that the creation of a capital market, as well as the corresponding regulatory infrastructure from the ground up, as Romania has been forced to do, is a complex process that takes many years, if not decades, to complete[2].

Romania's intention to join the EU has only increased the pressure to rapidly develop the infrastructure for a capital market. As a prerequisite for EU membership, Romania had to adjust its legislative and regulatory framework to the EU standards.

Given the underdeveloped state of Romania's financial sector, the EU was forced to assume a more active role in the development of institutions that underlie a mature securities market that it had in previous cases of accession, and comparable only to its involvement in the accession of the other CEECs (Central and Eastern European Countries – Hungary, the Czech Republic, Poland, Estonia, Latvia, Lithuania, Slovakia and Slovenia).

Notwithstanding its continued reliance on the classical method, the EU has recognized that as transition economies, the CEECs (Romania as well) present a different set of challenges for the pre-accession period that the states involved in prior round of enlargement. In particular, the EU shifted its pre-accession strategy away from an exclusive reliance on the adoption of the acquis and devoted more attention and resources towards the development of an adequate regulatory structure within the applying countries[3].

Regarding the European directives adoption and implementation process, initially an attempt was made for this process to be done only partially, by adapting the European directives to the specificity of the Romanian capital market. This attempt ended in a not so successful way, both formally and process wise (these initiatives did not succeed in producing the desired effects, being less effective in the areas they were designed to act). This flawed initial attempt represents in reality a blessing in disguise and a great opportunity for the Romanian

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market; had the specific/partial adoption succeeded, a pseudo-harmonized but functional system would have been created, a system that would have nevertheless required subsequent tempering with and transformation, slowing down the overall process, and even more, affecting the companies acting on the capital market, reducing their strength and competitiveness, and affecting the general image and trust in the entire process.

In time, what with the experience gained, the understanding and perspective on the regulatory framework requirements evolved, and Romania succeeded in setting out a mature legislative framework, moving to a formal and total adoption of the acquis in order to achieve a completely harmonized regulatory legislation. The result of this process exceeded all expectations, to the extent that Romania surpassed most of the initial 15 EU members regarding the harmonization of the securities market legislation. There is a double significance to this context: on one hand it can be seen that EU's attitude in this matter is not exactly impartial and equidistant, the strictness of its position differing from country to country, and on the other, and this is in our opinion more relevant, it represented a chance, an advantage Romania hold against the other member states, provided the knowledge to use it existed and would have been used.

Romania's transformed and harmonized legislative framework can be witnessed in the OUG 25/2002 (the CNVM act) sanctioned by the L 514/2002, the 297/2004 law and the CNVM acts and regulations. The EU Directives are transposed either in the primary legislation –law 297 – or in the secondary one – the CNVM regulations. This manner of incorporating and transposing the European Directives in the primary and secondary legislation proved to be more dynamic than the simple recreation of these directives in an organic law, giving a better response to the flexibility and transparency requirements of a security market.

This paper is primarily concerned with the role and influence the crisis has played in the development and/or modification of the regulatory framework for the capital market in Romania.

The previous time period has seen the capital market regulation in Romania characterized by two separate, although inextricably linked, processes that have occurred in our country over the course of the years prior to the crisis and have productively coexisted – the preparation for EU integration and the development of the infrastructure for the emerging securities market and of a regulatory framework to govern capital market transactions.

While the accession process from the regulatory point of view reveals that this process has largely focused on the formal adoption of EU legislation by Romania, and that the acquis communautaire in the securities field had been fully transposed, the degree of harmonization exceeding that of many of the EU 15 countries, the capital market in Romania was not prepared for any types of crisis, let alone one of such a magnitude.

Even though the oversight from the EU during the accession process played a key role in the establishment of a stronger securities regulator in Romania, the transposition process only served at superimposing the European regulatory platform over the Romanian national market, bringing along for the ride the same weaknesses – lack of early warning systems, micro and macro prudential policy, and so on.

This paper will attempt to present what regulatory additions and/or changes have been made to the national framework in the post-crisis era, and whether or not they were influenced or had anything to do with the crisis.

The table below is a snapshot of the legislative efforts undergone by the Romanian supervisory body, during the period 2009 – 2013. It is by no means an exhaustive one, referencing only the more notable regulatory initiatives, and summarizing their impact and relevance on the dynamic and development of the Romanian capital market.

No	Type (primary, secondary…)	Legislative Title	Market Effect
1	Primary	Law nr. 289/2010	Modifies: • L32/2000 – insurance market and supervision; modifies procedure, no direct influence on the market • OG 50/2005 – creation and functioning of CSSPP – modifies articles pertaining to the structure of the Commission and procedure – no influence on the market • OG 25/2002 – structure, budget and procedures for CNVM; increased oversight and control powers
2	Primary	Law 151/2014	• Clarifies the judicial status of the stock traded on RASDAQ or unquoted securities • Decision whether to admit the trading of stock issued by the company on a regulated market or to be traded on an Alternative Trading System (ATS)
3	Primary	Law 74/2015	• Sets the norms for authorization, activity and

			transparency for alternative investment funds managers • Collective Investment Organisms are included other than "Organismele de Plasament Colectiv în Valori Mobiliare (A.O.P.C.)" – which trade in securities, which have to register with the FSA
4	Secondary	Instruction 02/2009	Sets the internet underwriting and redemption procedure for participation titles issued by investment funds and distributed in Romania
5	Secondary	Instruction 03/2009	Explains how to determine direct and indirect holdings, in order to compute the 33% percentile
6	Secondary	Regulation 12/05 BNR/CNVM	Regarding credit risk for credit institutions and investment firms according to internal rating models
7	Secondary	Reg 22/08 BNR/CNVM	Regarding consolidated oversight of institutions and investment firms
8	Secondary	Reg 09 / 2009	Regarding the supervision of the international sanctions enforcement for the capital market
9	Secondary	Reg 29/10 BNR/CNVM 2009	Regarding the determination of minimal capital requirements for credit institutions and investment firms
10	Secondary	Instruction 02/2010	Regarding IPOs through the trading system of a market/ system operator
11	Secondary	Regulation 4 / 2010	CNVM registration and functioning of SC "Fondul Proprietatea" S.A., and the trading of their issued stock
12	Secondary	Regulation nr. 14/24 BNR/CNVM	For large exposures by credit institutions and investment firms
13	Secondary	Regulation 17/15/2010	For counterpart credit risk treatment for derivatives, redemption, borrowing/lending securities/commodities, credit margin operations
14	Secondary	Reg 16/17 BNR/CNVM	For credit risk diminishing techniques used by credit institutions and investment firms
15	Secondary	Reg 18/16 BNR/CNVM	Regarding credit risk for securitization holdings and exposure
16	Secondary	Instruction 06/2011	Regarding the application of IFRS by authorized entities, regulated and overseen by CNVM
17	Secondary	Reg 14/9 BNR/CNVM	Regarding capital adequacy for credit institutions and investment firms
18	Secondary	Reg 21/13 BNR/CNVM	Regarding credit risk for securitization holdings and exposure
19	Secondary	Instruction 01/2012	Regarding funds that invest in monetary assets
20	Secondary	Regulation 06/2012	For the application of art 41 REG (EU) nr. 236/2012 pertaining to short-selling and credit risk swaps
21	Secondary	Regulation 12/2012	Regarding the creation of the institutional framework and authorization for the Gov., through Public Finance Ministry, to auction the greenhouse certificates attributed to Romania
22	Secondary	Instruction 01/2013	To modify and add to I 6 / 2011 regarding the application of IFRS by authorized entities, regulated and overseen by CNVM
23	Secondary	Regulation 03/2013	For the authorization and functioning of the central counterparts for nonquoted derivatives, central counterparts and central trading registries
24	Secondary	Regulation 04/2013	Regarding support stock for certificates of deposit

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Regional Approach Regarding VAT in European Union

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Abstract.
This paper ties have a regional approach regarding VAT rate at E.U. level. The study was realized using data from Eurostat for the period 2004-2013. We also explain the changes in VAT in Baltic Countries, South-Eastern Countries, Central Europe Countries, Mediterranean Countries, Northern Europe Countries, Western Europe Countries. This article also describes VAT as a percentage of GDP, fiscal pressure determined by VAT.
JEL Codes: E6
Keywords: VAT, fiscal pressure, EU, GDP

1. Introduction.

VAT is the result of the value that is added to the goods or services by the trader at each stage of the production and distribution processes. Value added tax was first applied in France (1957) and, from 1 January 1970, it was adopted by the countries of the former Common Market, today the European Union, in order to avoid taxation in "cascade" as it was the tax on turnover.

VAT gradually spread across the all economy domains and was adopted by most countries, becoming the main source of budget revenues - over 40%. Denmark was the first country that used VAT after France. The following were Germany (1968), Sweden (1969) and Norway (1970). Value Added Tax has the following characteristics:

1. It is a general tax applied to activities of commercial nature that are specific to the processes of production and distribution of goods and provision of services;

2. Its collection is made fractionally through a defined system of partial payments whereby taxable persons deduct from the collected VAT the amount of tax these persons have paid to other taxable persons on purchases that serve to their business activities; the mechanism presented ensures the neutrality of the tax no matter the number of the existing transactions;

3. It is paid by the person who sells the goods or provides the services to the revenue authorities after it has deducted its VAT incurred from its suppliers; still, in reality the one who actually pays the VAT is the consumer of the goods or services as VAT is part of the price that is paid for a good or service; this feature of the VAT gives it the nature of an indirect tax;

4. It is a consumption tax that affects the final consumer as it is charged as a percentage of the price of the good or services this making possible to observe the existing tax burden in every stage of the production and distribution chain.

We will present and analyze data related to the share of VAT in the total taxation recorded in the EU Member States and the share in their GDP on a determined period of 12 years, going from specific to general: we will proceed firstly to an analyze concentrated on European regions and secondly we will undertake an analysis for all the 28th Member states in order to see in both stages of our analyze and for the mentioned period of time which are the possible existing patterns both at the level of the regions and at the level of all of the Member States. The data below has been retrieved from Eurostat Statistical Books, 2014 edition, "Taxation trends in the European Union. Data for the EU Member States, Iceland and Norway".

2. European regions. VAT as % from Total Taxation – 2000-2012.

a. Baltic Countries – case of Estonia, Latvia and Lithuania

In the case of the Baltic countries we can see that Estonia is the state where for the 2000-2007 period of time the share of VAT in the total taxation of the country was higher in comparison with the share of VAT in the total taxation of Latvia and Lithuania, the highest share in the entire period analyzed (2000-2012) being recorded in 2006 – 29.6%. As we observe from the data, the 2008 economical crisis determined a decrease of the share of VAT in the total taxation so that from a share in total taxation of 28.2% in 2007, VAT went down to a share in total taxation of 24.9%, registering a drop of 3.3 percentage points. The maximum share of VAT in total taxation was recorded in 2006 – 29.6% and the minimum was recorded in 2009 – 24.8%. In 2010, the share of VAT in total taxation begins to record a growth of 0.9 points compared with the previous year, the VAT share in total taxation being of 25.7%, the growth tendency continuing, as we can see from the data, until 2012 (a share of VAT in total taxation of 26,6%). Latvia and Lithuania recorded also a descendind trend of VAT share in total txaxtion between 2008 and 2009 and an ascending trend between 2010 and 2012, the maximum share of VAT in total taxation in Latvia being recorded in 2006 – 28.1% and the minimum of 22.5% in 2009; Lithuania recorded a maximum of VAT share in total taxation in 2011 – 28.8% and the minimum was recorded in 2004 – 22.3%.

b. South-Eastern Countries – case of Bulgaria and Romania

As it results from the data above, the maximum of VAT share of VAT in total taxation in Bulgaria was of 33.8% in 2008 and 2012 and the minimum was of 26.4% in 2000. In Romania the maximum share of VAT in total taxation of 30.6% was recorded in 2011 and the minimum in 2000 – 21.4%.

VAT as % from Total Taxation

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium	15.9	15.2	15.3	15.2	15.4	15.7	15.9	16.2	15.7	16.0	16.2	15.9	15.8
Bulgaria	26.4	27.4	25.6	27.8	30.3	32.7	34.9	31.1	33.8	31.1	33.3	32.0	33.8
Czech Republic	18.4	18.1	17.5	17.2	19.5	19.4	18.0	17.7	19.7	20.6	20.7	20.4	20.6
Denmark	19.4	19.9	20.2	20.1	19.9	19.8	20.8	21.2	21.0	21.3	20.7	20.8	20.7
Germany	16.6	16.8	16.5	16.3	16.4	16.4	16.5	18.1	18.3	19.0	19.0	18.9	18.6
Estonia	27.2	27.0	27.0	26.5	25.1	28.3	29.6	28.2	24.9	24.8	25.7	26.0	26.6
Ireland	23.0	22.9	24.6	24.2	24.3	24.8	24.1	24.0	24.6	22.7	22.7	21.3	21.7
Greece	20.9	22.5	22.7	21.8	21.7	21.5	22.5	22.9	22.7	21.1	23.2	22.2	21.0
Spain	18.1	17.7	17.1	17.7	17.7	18.1	17.8	16.1	15.5	13.5	17.4	17.1	17.0
France	16.9	16.6	16.5	16.6	16.8	16.8	16.6	16.7	16.5	16.4	16.5	16.1	15.6
Croatia	:	:	32.8	33.0	32.8	33.1	32.7	32.1	32.2	30.9	32.2	32.4	34.4
Italy	15.6	15.1	15.3	14.4	14.4	14.8	14.9	14.4	13.9	13.3	14.8	14.7	13.9
Cyprus	18.2	18.7	21.5	24.3	25.4	26.1	27.1	25.5	27.4	26.0	25.8	24.0	25.2
Latvia	23.9	23.6	23.5	25.3	24.4	26.8	28.1	26.9	23.0	22.5	24.3	24.6	25.5
Lithuania	24.4	24.7	25.3	23.3	22.3	24.3	25.3	26.8	26.0	24.2	27.6	28.8	28.1
Luxembourg	14.3	14.6	14.7	14.9	16.2	16.4	16.1	16.1	16.8	17.3	16.9	17.5	18.2
Hungary	22.3	21.1	20.6	21.6	23.5	22.5	20.4	19.9	19.3	21.3	23.0	23.1	23.9
Malta	21.0	21.2	20.6	20.6	22.8	24.5	23.8	22.2	23.3	22.9	23.2	23.7	23.3
Netherlands	17.3	18.9	19.1	19.5	19.4	19.2	18.9	19.4	18.5	18.3	18.7	18.0	17.8
Austria	18.8	17.9	18.7	18.3	18.4	18.8	18.4	18.4	18.2	18.9	18.9	18.5	18.6
Poland	21.3	21.0	22.0	22.2	22.8	23.5	24.1	23.9	23.4	23.4	24.5	24.9	22.5
Portugal	24.6	24.2	24.2	24.4	25.4	26.8	26.6	25.8	25.6	22.9	24.8	25.1	26.2
Romania	21.4	21.8	25.2	26.0	24.5	29.0	27.8	27.9	28.2	24.7	28.5	30.6	30.1
Slovenia	23.1	22.1	22.6	22.3	22.3	22.3	22.3	22.4	22.8	21.6	21.9	22.3	21.8
Slovakia	20.4	21.9	21.2	22.7	24.7	25.1	25.5	23.0	23.8	23.4	22.6	23.9	21.5
Finland	17.4	17.8	18.2	19.4	19.6	19.8	19.9	19.5	19.5	20.2	20.1	20.7	20.8
Sweden	16.7	17.6	18.6	18.5	18.3	18.4	18.5	19.1	20.0	20.7	21.3	21.4	21.0
United Kingdom	17.9	18.0	18.9	19.6	19.3	18.5	18.0	18.1	16.9	16.4	18.4	20.3	20.5
EU-28 averages													
arithmetic	:	:	20.9	21.2	21.6	22.3	22.3	21.9	21.8	21.3	22.2	22.3	22.3

Source: DG Taxation and Customs Union and Eurostat (online data code: gov_a_tax_ag)

c. Central Europe Countries – case of Croatia, Germany, Hungary, Poland, Slovakia, Slovenia, Austria

As resulted from the data, the highest shares of VAT in total taxation for Central Europe countries was recorded in Croatia, variating from a maximum of 34.4% in 2012 to a minimum of 30.9% in 2009 and the smallest shares were recorded in Austria, where the maximum was of 18.9% in 2010 and the minimum was of 18.2% in 2008 and Germany with a minimum of 16.3% in 2003 and a maximum of 19% in 2009 and 2010. In Poland, Slovakia and Slovenia the share of VAT in total taxation variating around the percentage of 20 between 2000 and 2012.The maximum share for Slovakia was of 25.5% in 2006 and of 23.1% in 2000 in Slovenia. Hungary recorded a maximum of 23.9% in 2012 of VAT share and a minimum of 19.3% in 2008.

d. Mediteraneean Countries – case of Spain, Greece, Portugal , France, Italy, Cyprus

In the mediteranean area between 2000 – 2012 time period, Italy and France were the countries with the lowest VAT shares in total taxation. France recorded a maximum share of VAT in total taxation of 16.9% in 2000 and a minimum of 15.6% in 2012. As for Italy, the minimum was of 13.3% in 2009 and the maximum of 15.6 in 2000. The mediteraneean country with the highest shares of VAT in total taxation in the analyzed period was Portugal with a maximum of 26.8% in 2004 and with a minimum of share of VAT in 24.2% in 2001 and 2002.

e.Northern Europe Countries – case of Denmark, Finland, Sweden

The highest VAT shares in total taxation for the Northern Europe countries were recorded in Denmark, followed by Finland and Sweden. In Denmark the maximum of VAT share in total taxation was recorded in 2007 – 21.2% and the minimum of 19.4% in 2000. As for Finland and Sweden, the maximum was of 20.8% in 2012, respectively 21.4% in 2011. The minimum for these two countries was of 17.4% 2000, respectively 16.7% in the same year.

f. Western Europe Countries – case of United Kingdom, Netherlands, Luxembourg, Belgium

United Kindom registered a decrease of VAT share in 2008 and 2009 compared with the previous years, the minimum value being recorded in 2009 – 16.4%. The maximum share was of 20.5% recorded in 2012, being part of ascending trend of VAT share in total taxation recorded after 2008 and 2009 when the shares decreased, being the lowest recorded in the 2000 – 2012 period of time. Both Belgium and Luxembourg recorded the lowest

overall VAT shares, the minimum for Belgium being of 15.2% in 2001 and 2003, respectively of 14.3% in 2000. The maximum for these countries was of 16.2% in 2007 and 2010, respectively of 18.2% in 2012. Netherlands is situated in a middle position with a maximum of VAT share in total taxation of 19.5% in 2003 and a minimum of 17.3% in 2000.

Comparing the European regions we observe that in 2000-2012 period of time the highest VAT shares in total taxation were recorded in the Central Europe region (Czech Republic), in the South-Eastern region (Romania) and in the Baltic area (Estonia). The lowest VAT shares were recorded in Western Europe (Belgium) and in the Mediteranean area (Italy).

In the case of Romania, its shares of VAT from total taxation were lower that Bulgaria's, with a maximum share of VAT in total taxation of 30.6% and a minimum of 21.4% in 2000.

3. European regions. VAT as % from GDP – 2000-2012.

VAT as % from GDP

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium	7.2	6.9	6.9	6.8	6.9	7.0	7.1	7.1	7.0	6.9	7.1	7.0	7.2
Bulgaria	8.3	8.4	7.3	8.6	9.9	10.2	10.7	10.4	10.9	9.0	9.2	8.7	9.4
Czech Republic	6.2	6.1	6.0	6.1	7.0	6.9	6.4	6.3	6.8	6.9	6.9	7.1	7.2
Denmark	9.6	9.6	9.6	9.6	9.8	10.1	10.3	10.4	10.1	10.2	9.8	9.9	10.0
Germany	6.8	6.6	6.4	6.4	6.3	6.3	6.4	7.0	7.1	7.5	7.2	7.3	7.3
Estonia	8.4	8.2	8.4	8.2	7.7	8.7	9.1	8.9	7.9	8.8	8.7	8.4	8.7
Ireland	7.2	6.8	7.0	7.0	7.3	7.6	7.7	7.6	7.3	6.4	6.4	6.0	6.2
Greece	7.2	7.5	7.6	7.0	6.8	6.9	7.1	7.4	7.3	6.5	7.3	7.2	7.1
Spain	6.2	6.0	5.8	6.0	6.2	6.5	6.5	6.0	5.1	4.1	5.6	5.4	5.5
France	7.4	7.3	7.2	7.2	7.3	7.4	7.3	7.2	7.1	6.9	7.0	7.0	7.0
Croatia	:	:	12.4	12.4	12.0	12.1	12.2	12.0	11.9	11.3	11.7	11.4	12.3
Italy	6.5	6.2	6.2	5.9	5.8	5.9	6.2	6.2	5.9	5.7	6.3	6.2	6.1
Cyprus	5.5	5.7	6.6	7.8	8.4	9.1	9.7	10.2	10.6	9.2	9.2	8.5	8.9
Latvia	7.1	6.8	6.7	7.2	7.0	7.8	8.6	8.2	6.7	6.0	6.6	6.8	7.1
Lithuania	7.5	7.3	7.3	6.7	6.4	7.1	7.6	8.1	8.0	7.4	7.9	7.9	7.7
Luxembourg	5.6	5.8	5.8	5.7	6.1	6.2	5.8	5.7	6.3	6.9	6.4	6.7	7.1
Hungary	8.9	8.1	7.8	8.2	8.9	8.4	7.6	8.1	7.8	8.6	8.8	8.6	9.4
Malta	5.7	6.1	6.2	6.3	7.1	8.0	7.9	7.5	7.7	7.7	7.5	7.8	7.8
Netherlands	6.9	7.3	7.2	7.3	7.3	7.2	7.4	7.5	7.3	7.0	7.3	6.9	7.0
Austria	8.1	8.1	8.1	8.0	7.9	7.9	7.6	7.7	7.8	8.0	8.0	7.8	8.0
Poland	6.9	6.8	7.2	7.1	7.2	7.7	8.1	8.3	8.0	7.4	7.8	8.0	7.3
Portugal	7.6	7.5	7.6	7.7	7.7	8.4	8.6	8.5	8.4	7.1	7.8	8.3	8.5
Romania	6.5	6.2	7.1	7.2	6.7	8.1	7.9	8.1	7.9	6.6	7.6	8.7	8.5
Slovenia	8.6	8.3	8.5	8.5	8.5	8.6	8.5	8.4	8.5	8.0	8.2	8.3	8.2
Slovakia	7.0	7.2	7.0	7.5	7.8	7.9	7.5	6.7	6.9	6.7	6.3	6.8	6.1
Finland	8.2	8.0	8.1	8.6	8.5	8.7	8.7	8.4	8.4	8.7	8.5	9.0	9.2
Sweden	8.6	8.7	8.8	8.8	8.8	9.0	8.9	9.0	9.3	9.6	9.7	9.5	9.3
United Kingdom	6.5	6.5	6.6	6.7	6.7	6.5	6.5	6.4	6.3	5.6	6.5	7.3	7.3
EU-28 averages													
arithmetic	:	:	7.4	7.5	7.6	7.9	8.0	8.0	7.9	7.5	7.8	7.8	7.9

Source: DG Taxation and Customs Union and Eurostat (online data code: gov_a_tax_ag)

a. Baltic Countries – case of Estonia, Latvia and Lithuania

Between 2000 and 2012, for the Baltic countries the highest shares of VAT from GDP were recorded, like in the case of VAT shares from total taxation, in Estonia where the maximum share was of 9.1% in 2006 and the minimum of 7.7% in 2004. In Latvia and Lithuania the lowest shares of VAT from GDP were of 6.0%, recorded in 2009, respectively of 6.4% in 2004. The highest share of VAT from GDP in the case of Latvia is of 8.6% and it was recorded in 2006. For Lithunia, 2010 and 2011 were the years when the maximum of 7.9% was recorded.

b. South-Eastern Countries – case of Bulgaria and Romania

Comparatively, from the data above, we can observe that overall the shares of VAT share in GDP between 2000 and 2010 were lower in Romania than in Bulgaria. The differences between the two countries emerge also from the differences exisiting in the maximum and the minimum shares of VAT from GDP. The maximum share in the case of Bulgaria was of 10.9, recorded in 2008 and the minimum was of 7.3% in 2003. As for Romania, the maximum share of VAT from GDP was recorded in 2011, being of 8.7%. The minimum of 6.2% was recorded in 2001.

c. Central Europe Countries – case of Croatia, Germany, Hungary, Poland, Slovakia, Slovenia, Austria

In the case of the Central Europe countries the most relevant case is that of Croatia that has the highest shares of VAT from GDP in the analyzed period, recording a maximum of 12.4% in 2002 and 2003 and a minimum of

11.3% in 2009. Following Croatia, Austria has the highest shares of VAT from GDP, with a maximum of 8.1% recorded in 2000, 2001 and 2002. The minimum of VAT share of 7.6% was recorded in 2006.

In opposition, the lowest shares of VAT from GDP were recorded in Germany with a maximum of 7.5% in 2009 and a minimum of 6.3% in 2004 and 2005.

d. Mediteraneean Countries – case of Spain, Greece, Portugal, France, Italy, Cyprus

In the Mediteraneean area the lowest VAT share from GDP in the analyzed period are those corresponding to Spain with a minimum share of VAT from GDP recorded in 2009 of 4.1% and a maximum of 6.5% recorded in 2005 and 2006. The highest maximum of VAT share from GDP is encountered in Cyprus – 10.6% in 2008. The most stable shares of VAT from GDP for the entire period is encountered in France, variating between a minimum of 6.9% recorded in 2009 to a maximum of 7.4% recorded in 2000 and 2005.

e. Northern Europe Countries – case of Denmark, Finland, Sweden

Denmark is the country with the highest shares of VAT from GDP from the Northern Europe countries with a maximum of 10.4% in 2007 and with a minimum of 9.6% between 2000 and 2003. Finland and Sweden have a maximum of VAT share from GDP of 9.2% in 2012, respectively of 9.7% in 2010. Their minimum share is of 8.0% in 2001, respectively 8.6% in 2000.

f. Western Europe Countries – case of United Kingdom, Netherlands, Luxembourg, Belgium

Luxembourg has one of the lowest VAT shares from GDP for the entire analysed period, with a minimum share of 5.6% in 2000. The maximum share of VAT from GDP for Luxembourg was recorded in 2012 - 7.1%. Following, United Kigdomn has a maximum share of VAT from GDP of 7.3% for two consecutive years, in 2011 and 2012, and a minimum of share of 5.6% in 2009.

In the case of Netherlands and Belgium, we have a maximum share of VAT of 7.0% recorded in 2012, respectively of 7.2% recorded in 2000 and 2012. The minimum share for Netherlands is of 6.9% and was recorded in 2000 and 2011. In Belgium the minimum share of VAT from GDP was recorded in 2003, being of 6.8%.

4. Conclusions.

At the entire level of the European Union the highest shares of VAT from total taxation were recorded in countries like Bulgaria, Estonia, Croatia, Lithuania, Portugal and Romania. In constrast, the lowest shares at the level of EU of VAT from total taxation were recorded in the case of Belgium, Italy and Germany as is results from the analysed data.

As for the averages recorded at the level of EU-28 related to VAT share from total taxation between 2000 and 2012, the highest average was recorded in 2005, 2006, 2011 and 2012 – 22.3%, while the lowest average of 20.9% was recorded in 2003.

With respect to the share of VAT from GDP the highest shares were recorded for the analysed period in Estonia, Bulgaria, Hungary, Finland, Austria, Slovenia or Sweden, while in countries like Cyprus, Luxembourg or Spain there were recorded the lowest shares of VAT from GDP. The low share of VAT both from total taxation and GDP can be, in the case of small countries like Luxembourg or Cyprus, correlated with the surface or existing population of the countries.

The averages recorded at the level of EU-28 related to VAT share from GDP between 2000 and 2012 had a maximum of 8.0% in 2006 and 2007 and a minimum of 7.4% in 2003.

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Testing the validity of the Ricardian approach to deficits in Romania – Historical Evidences

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Abstract.
This paper follows the Ricardian approach to deficits in Romania for the period 1993 – 2014. In order to test the Ricardian approach to deficits, we have used a Vector Autoregression with two variables, gross national savings rate and budget balance. The Ricardian view is confirmed when an increase in the budget deficits produces a positive shift in national savings. Our results show that Ricardian approach to deficits cannot confirm itself as valid macroeconomic theory for the Romanian economy.

1. Introduction.

In the current times, after passing the first phase of the financial crisis, the issue of the deficits became very problematic for the economists, as well as for the practitioners and theoreticians. Many of them are considering the deficits problem as a determinant factor for the crisis start in United States and in Europe. For instance, Daniel Thornton (2012) explains how the debt/deficit problem started in USA, back then in 1970, when the government increased the spending, without a corresponding adjustment in revenues. Until the actual crisis began, big periods of deficits were associated only with wars: the War of 1812, Civil War, and World Wars I and II. Every period of big deficits was followed by an upturn, being created budget surpluses. All, except the Great Depression from 1929 -1933. The main problem for the United States was the period between 1970 and 2007, when the growth rate of the deficit surpassed the growth rate of the GDP (Thornton, 2012).

In the moment of writing this paper, Germans, Greeks and the European Union are trying to create a reasonable plan Greece, but one question remains still open for the debate: are the structural problems that caused a lot of fiscal trouble for the countries in Europe going to be managed and solved in a proper way? This paper is analyzing the deficit issue, using the Ricardian approach to deficits, in Romania.

2. Literature review.

The Ricardian equivalence is an economic theory, which began back in 1877, with the David Ricardo's. On the Principles of Political Economy and Taxation. In his writings, Ricardo asked himself which is the best way to finance a war: by creating new government debt or through a new temporary tax? His answer was that through both of these ways, you have one certain fact: debt. So, it does not exist any differnce between the ways of financing. After one century (1974), Robert Barro, having as a starting point Ricardo's dilemma, he asked himself if the bonds are considered net wealth (Belingher and Moroianu, 2015). Two years later, sensing the similarities between the scientific work of the ones remembered, Buchanan propose a name for this kind of equivalence: Ricardian Equivalence. Rose and Hakes (1995) are considering the Ricardian Equivalence the logical extension of the permanent income/life cycle hypothesis.

In 1996, one of the founders of the neo-classical school of economic thinking, the same Robert Barro introduces to the economic theory "The Ricardian Approach to Budget Deficits", in which he explains larger his Ricardian view, facing the standard model of the budgetary deficits. By sketching the standard model, this represents an explanation of why, when a government decides to create a deficit to finance the current taxation, the aggregate demand should grow. With other words, the private saving drops less than the taxation cut and in accordance to this the national savings must grow (Barro, 1996).

The antithesis of the standard model, is the Ricardian approach: when a government spending is financed through deficit, this will reflect in future in bigger taxes, which will have the same value with initial tax cut. This effect is caused by the budgetary constraint, mainly and in economy there is no such thing as free meal! Every spending you generate must be paid now or later. Second, consumers are trying to maximize the present value of lifetime consumption (according to the permanent-income/life cycle hypothesis).

Rose and Hakes (1995) are showing in their paper, that one of the implications of the Ricardian Equivalence Hypothesis (REH) is that the deficits are neutral. In order to this, the deficits could not affect other macroeconomic variable, such as the interest rate. They agree to the fact that the deficit neutrality to the interest rate is a necessary condition to the Ricardian Equivalence, but not sufficient.

Other authors who also tested REH are Patinkin (1965), Bayley (1971) or Kotchin (1973). A similar model, but on a microeconomic scale was introduced by Modigliani and Miller (1958), which assumes that in perfect competition market conditions, the companies are indifferent to the way of financing: through own capitals or debts. Also Bernheim (1987) and Seater (1993) are stating that fiscal policies used to stimulate the

aggregate demand are useless. Emendorf and Mankiw (1999) disagree the two authors, demonstrating that their results are irrelevant.

For the Romanian economy, Ricardian Equivalence Hypothesis, was tested in a previous paper by Belingher and Moroianu (2015). The consumption function used for the analysis is described below:

$$VHHC_t = a_0 + a_1 * VG_t + a_2 * VDD_t + a_3 * DDum_t + \varepsilon_t \quad (1)$$

where VHHC is the growth rate of the households consumption, VG is the g.r. of the government spending, VDD is the g.r. of the disposable income and DDum is a dummy variable, which is a filter used to investigate only the deficit periods.

The tested period started in 2004:4 and it ends in 2012:3. Their results show that they were not able to identify Ricardian Equivalence for the Romanian Economy.

3. Research methodology and econometric evidence.

In accordance to Rose and Hakes (1995) paper, an increase in the budget deficit should increase household saving. Other said, "households should respond to an increase in the deficit with rightward shift in the credit supply locus so that future consumption need not to be reduced to accommodate future taxes".

The model introduced in this paper is a Vector Autoregression with 1 lag (a VAR(1)) with two macroeconomic endogenous variables. A VAR in reduced form can be described as:

$$y_t = c + A_1 y_{t-1} + A_2 y_{t-2} + \cdots + A_p y_{t-p} + e_t \quad (2)$$

The corresponding matrix for a VAR(1) model is:

$$\begin{bmatrix} y_{1,t} \\ y_{2,t} \end{bmatrix} = \begin{bmatrix} c_1 \\ c_2 \end{bmatrix} + \begin{bmatrix} A_{1,1} & A_{1,2} \\ A_{2,1} & A_{2,2} \end{bmatrix} \begin{bmatrix} y_{1,t-1} \\ y_{2,t-1} \end{bmatrix} + \begin{bmatrix} e_{1,t} \\ e_{2,t} \end{bmatrix} \quad (3)$$

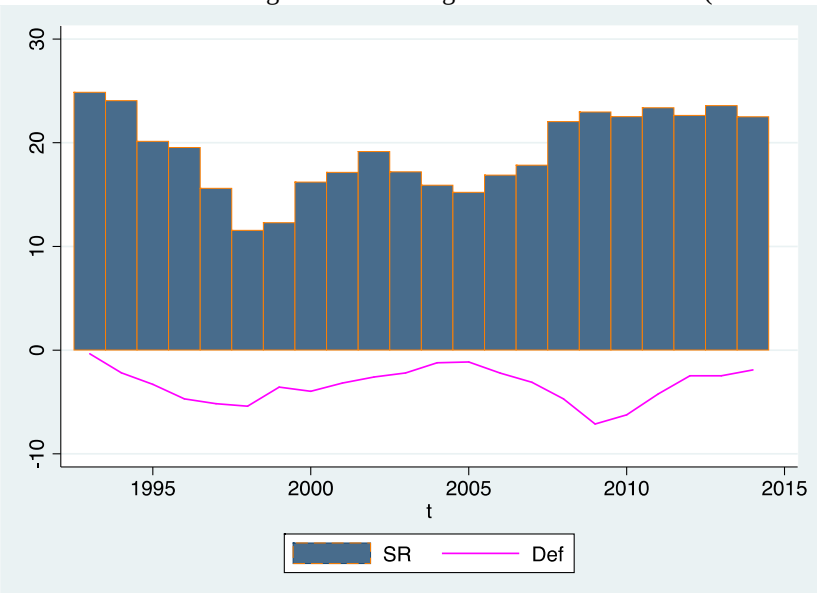
The variables we have used in this study have been chosen in accordance to their availability in the databases. The main database used was The Economist Intelligence Unit. The variables are:

- **Gross National Savings Rate (%);**
- **Budget Balance (% GDP).**

The data is yearly and starts with 1993 and it ends in 2014. According to the EIU, the data for 2014 is not final. The following chart describes the evolution of the analyzed variable for the time interval:

In the econometric model we have used the first differences of the variables, obtained by applying the "D1" operator in the Stata 12 software. Further, for simplicity, we will use the following acronyms for the time series: **DSR** (for the gross national savings rate) and **DDef** (for the deficit).

Fig. 1: Gross National Savings Rate and Budget Balance in Romania (1993 – 2004)



Source: own computations, using the data supplied by EIU

The first step was to test the two time series for stationarity. According to the Dickey-Fuller test, the data were stationary in difference.

In the second phase of our research we had to estimate the proper number of lags, which had to be used in the model with lag order selection test (pre-estimation) from Stata software. The results and the reason for which we have chosen one lag, may be found in following table:

Table 1: Lag order selection test (pre-estimation)

Selection-order criteria
Sample: 1996 - 2014 Number of obs = 19

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-70.8562				7.34129	7.66907	7.6859*	7.76849*
1	-66.6233	8.4657	4	0.076	7.2004*	7.64456*	7.69504	7.94281
2	-65.4425	2.3617	4	0.670	9.88403	7.94131	8.02544	8.43839

Endogenous: DDef DSR
Exogenous: _cons

Source: own computations

Third step was to test the data for cointegration, by using the Johansen test. The following equation describes the methodology proposed by Johansen (1988, 1991, 1995):

$$\Delta X_t = \Gamma_1 \Delta X_{t-1} + \cdots + \Gamma_{k-1} \Delta X_{t-k+1} + \prod X_{t-k} + \mu + u_t \quad (4)$$

where:

X_t is a vector of variables, $\Delta \equiv$ (1- L) is the first difference operator; μ is a constant vector; $\prod$ is coefficient matrix with reduced rank r<k and $u_t$is a vector of innovations. The results for the Johansen test are found in table no. 2:

Table 2. Johansen cointegration test

Johansen tests for cointegration
Trend: constant Number of obs = 21
Sample: 1994 - 2014 Lags = 1

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	2	-80.089459	.	7.9016*	15.41
1	5	-77.389986	0.22670	2.5027	3.76
2	6	-76.138658	0.11235		

Source: own computations

According to the trace statistic (* value), one can see that the time series do not exhibit any cointegration in trend or constant (the results were similar for the both versions of the test). As a consequence of the lag selection criteria and of the Johansen test, the best fitted model is a VAR(1). The estimation of the econometric model is represented in table no. 3:

Unfortunately, we have found that there is poor correlation between the variables (R-squared = 0.22). Our interest here consists in the first equation and by using a 90 percent confidence interval, we can see that the all the lagged coefficients for this equation are statistically significant. Also the Wald lag exclusion statistics confirm us that our model is correct specified, having a p-statistic for the first equation of 0.06 and for the all equations joined a p-statistic of 0.01.

Table 3. VAR(1) for testing the Ricardian Approach to deficits in Romania

Vector autoregression

Sample:	1995 – 2014	No. of obs	= 20
Log likelihood	= -70.52057	AIC	= 7.652057
FPE	= 7.249005	HQIC	= 7.71037
Det(Sigma_ml)	= 3.960232	SBIC	= 7.950776

Equation	Parms	RMSE	R-sq	chi2	P>chi2
DSR	3	2.14427	0.2183	5.584249	0.0613
DDef	3	1.12159	0.2287	5.931657	0.0515

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
DSR						
DSR						
L1.	.3556137	.1983907	1.79	0.073	-.033225	.7444524
DDef						
L1.	.5807753	.3579599	1.62	0.105	-.1208132	1.282364
_cons	.0064993	.4439142	0.01	0.988	-.8635566	.8765552
DDef						
DSR						
L1.	-.0718421	.1037713	-0.69	0.489	-.27523	.1315459
DDef						
L1.	.4306235	.1872363	2.30	0.021	.0636471	.7975999
_cons	.0555123	.232196	0.24	0.811	-.3995836	.5106081

Source: own computations

Hence, we have decided to test the model for errors' autocorrelation, using Lagrange-multiplier test (until the 5th lag) and for model's stability, by using Eigenvalue stability condition. The results are showed further in table no. 4:

Table 4. VAR tests

Eigenvalue stability condition

Eigenvalue	Modulus
.3931186 + .2007921*i*	.441429
.3931186 - .2007921*i*	.441429

All the eigenvalues lie inside the unit circle.
VAR satisfies stability condition.

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	0.7345	4	0.94700
2	3.5029	4	0.47743
3	2.8749	4	0.57897
4	4.1717	4	0.38327
5	3.0746	4	0.54542

H0: no autocorrelation at lag order

Source: own computations

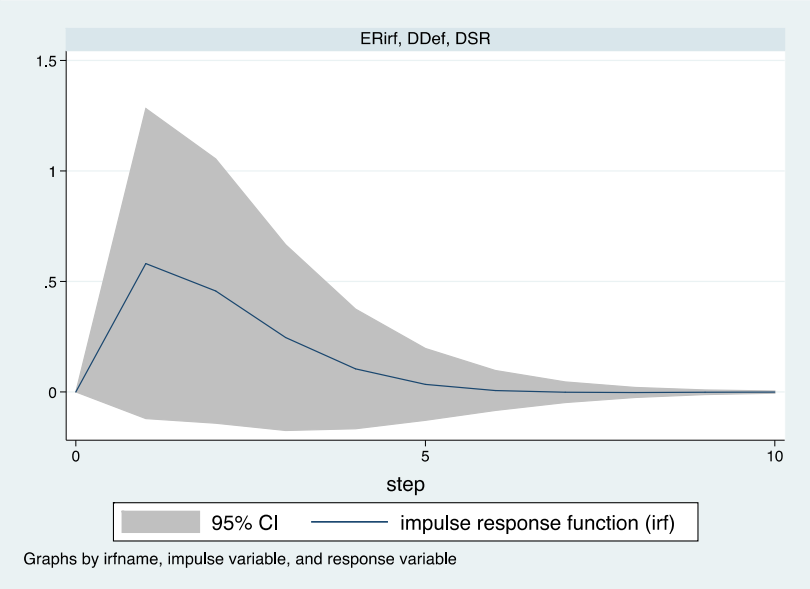
It resulted that there is no evidence of autocorrelation until the 5th lag (LM test) and VAR is stable (Eigenvalue).

The last step represents the core of this study. We will analyze what happens with is the response of the savings rate, when an impulse occurs in deficit. An impulse- response function can be described as:

$$y_{t+n} = \sum_{i=0}^{\infty} \Psi_i \epsilon_{t+n-1} \Leftrightarrow \{\Psi_n\}_{i,j} = \frac{\partial y_{it+n}}{\partial \epsilon_{jt+n}} \quad (5)$$

A graphic representation of the IRF may be found below:

Fig. 2. VAR's impulse-response function



Source: own computations

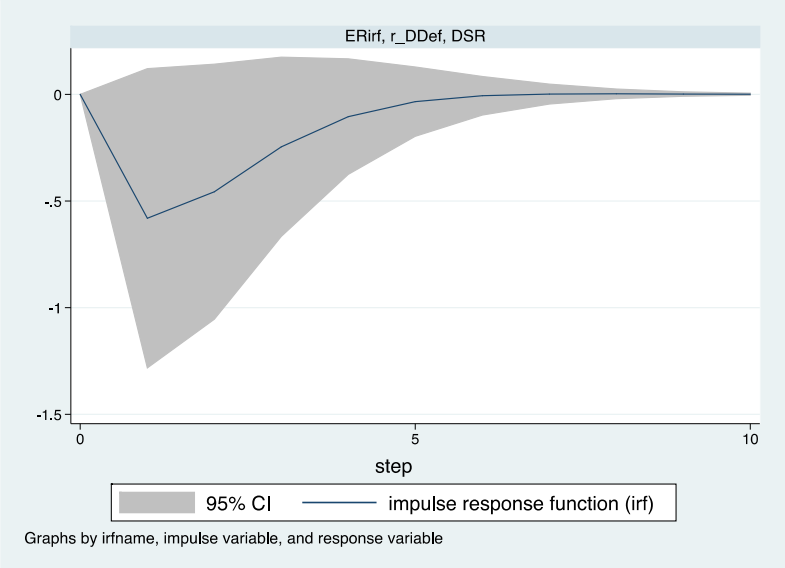
One may see that it do exists a positive shift in the savings rate when a shock in the deficit occurs, even though this change is very small. In order to understand the economic phenomena, this graphic should be watched upside-down, because a positive shock in the deficit variable, it means, in reality, a decrease in the deficit (deficits are negative). The following graphic is a representation of the re-done VAR with the Deficit variable multiplied by -1.

4. Concluding Observations and further development

The estimations of our model disagree Rose and Hakes (1995) paper, in which they are saying that an increase in the budget deficit should increase household saving. In order to obtain these results we have used a Vector Autoregression with one lag and based on its estimations, the impulse-response function was presented in the previous section. Our findings are in-line with the results of Belingher and Moroianu (2005), who are using a linear model of regression to establish a consumption function for the Romanian economy. They do not find any trail of the Ricardian Equivalence among the Romanian macroeconomic variables.

As a further development, our plan is to build another econometric model, most probably a Vector Error Correction Model, based on other variables (such as government revenues, government expenditures etc.) to test whether or not the new results correspond with the ones in this paper. Based on this paper, the deficit model, which stands for Romania's case, is the standard one.

Fig. 3. Re-done VAR's IRF with the Deficit variable multiplied by -1



Source: own computations.

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*** http://libertybullhorn.com/2015/03/24/growth-and-deficits-in-europe/

Are mergers and acquisitions influenced by taxation?

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Abstract.
Many times, in order to have successful mergers and acquisitions (M&As), investors rely on the taxation system. The aim of this paper is to analyse whether a state taxation characteristics can influence the investors' decision to take part in mergers and acquisition in that particular state.

Our database consists of the number and value of the mergers and acquisitions for more than 60 states from different continents. We took into account also the legal system of the states analysed because it is well known that it had a decisive role in establishing the fundaments of the taxation.

The results show that statutory corporate tax rate, labour tax or the time spent to register a business can be important factors in explaining the attractiveness of an economy to investors willing to make mergers or acquisitions in a state.

Key words: mergers and acquisitions, taxation, corporate tax, business environment
JEL: G32

1. Introduction.

Nowadays, mergers and acquisitions are considered to be a good strategy for companies attempting to maintain the competitive advantage or to win new markets so they can be in the front. Corporations usually spend a lot of money for this strategy and they are in permanent search for the best company to acquire in order to satisfy their needs.

In M&As companies are looking for ownership advantages. Ownership advantages usually arise from the change in ownership of the target firm that is expected to provide value due to the changes in the strategy, company's interest, management and perspective. All of this can result in the increasing of the target's future cash flows or in the decreasing of the business risk. However the change in operating performance following mergers and acquisitions can be also due to a better tax management. Even if in the literature there are not many studies that analysis this effect, the lowering of the target firm's tax burden is a solution for the acquiring company in order to generate ownership advantages.

To a great extent, taxes influence investment, the financing decisions and the investors' behaviour. Decision makers must cope with the complexity of the tax systems in order to obtain advantages. An investor often looks at the statutory tax rate when is making a decision, but there are a lot of other tax features that must be taken into account when a merger or acquisition decision is taken by a rational investors.

The aim of this paper is to study if the taxation features that characterize a state can influence the number of M&A transactions. We also want to analyze if some of the taxation system indicators can influence the behaviour of investors when it comes to mergers and acquisitions. We believe that this study is for the interest of both practitioners and academics as long as the taxation environment is a main interest in all fields and finding some key elements that link this with M&As are an overall interest.

The study is structured as follows. In the next section we are briefly presenting the main findings of other studies in the literature. Then the database and the methodology used in the study. After this, we will present the main results and in the final we will draw the conclusions.

2. Literature review.

In the literature there are analyzed several ways in which companies can rely on tax advantages when they decide to do mergers and acquisitions. Companies may reduce taxes through a merger or acquisition and this effect can be seen at both the corporate and shareholder level. Also, in some cases the tax benefits from a M&A transaction is available through other means, like the economic environment of another country, so these benefits are not necessarily attributed to the merger and acquisition process.

According to Devereux and Griffith (1998), in term of financial behavioral decisions, the role played by tax has two possible explanations. Using a logit regression, the authors analyze the determinants of a decision taken by a United States company to choose move in France, Germany and the United Kingdom. First, the simple investor choice is generally influenced by the effective average tax rate, because this can easily be analyzed right from the beginning. Second, if we take a specialized investor, his decision will probably depend

on the effective marginal tax rate, because this tax is considered to be more relevant. Finally, investors' behavior is decisive in the decision to obtain a lower tax rate for their investments.

Other papers, Büttner and Ruf (2007) and Barrios et al (2012) use company level data to investigate the location choices of multinational companies. In both studies the authors look on acquisitions over time, and in many cases resulted that the decision for a company to invest in a specific country is independent of whether it invests in a third country. So, usually the decision take into account only the economic environment of the target country and not at a larger context.

Other studies like Di Giovanni (2005) and Coeurdacier et al (2009) examine the determinants of M&A transaction between countries, using data from 1990-1999 and 1985-2004, respectively. Di Giovanni finds that the size of domestic financial markets has a strong positive correlation with companies investing abroad, while Coeurdacier et al find significant effects in case that the countries are member of the EMU (Economic and Monetary Union) and the EU (European Union). Also in both papers there is a significantly negative impact of corporate taxation in the country of the acquired company.

There are also other studies that analyze the effects of taxation of mergers and acquisitions processes. Martin et al (2012) examine the link between target tax aggressiveness and acquisition premiums, and the authors find out that there is a strong correlation. Moreover, Chow et al (2013) and Col (2012) examine announcement returns of target companies and acquirers to determine if the future tax avoidance can be a way of capital gain.

Kaplan (1989) and Devos et al (2009) estimate the extent to which tax savings are responsible for M&A gains. The results are surprising because it looks like many transactions are driven by taxation purposes. On the other hand there are studies that examine if there are changes in taxable income of domestic companies after being acquired by foreign one (Blouin et al, 2005).

Taxation can be a characteristic of the cultural environment of a country, but in many cases culture and social issues can influence the behavior of investors in cases of M&A transaction (Ciobanu and Bahna, 2015).

3. Database and methodology.

To determine how taxation features are affecting mergers and acquisition we used a database that includes the number of M&A transactions for 46 countries of the world. We took the most important countries in terms of the M&A activity. The data is provided by Zephyr and includes aggregated data on acquisitions and mergers in the last 5 years. We can see that the highest numbers of M&As in 2014 are recorded in the most developed economies of the world, but there are also countries in Asia and Extreme Orient that are caching up.

Table 1: The number of M&A transactions in 2014

Country	M&A Number	Country	M&A Number
Australia	3933	Lebanon	7
Austria	199	Lithuania	111
Belgium	466	Malaysia	1389
Bulgaria	776	Netherlands	1357
Canada	3892	New Zealand	389
China	7245	Norway	592
Croatia	71	Philippines	193
Czech Republic	187	Poland	1471
Denmark	513	Portugal	221
Finland	996	Romania	616
France	2097	Russian Federation	2673
Germany	1919	Singapore	644
Greece	52	Slovak Republic	69
Hungary	187	Slovenia	63
India	2946	Spain	2563
Indonesia	397	Sri Lanka	137
Ireland	275	Sweden	1300
Italy	1325	Switzerland	445
Japan	3379	Thailand	452
Jordan	80	Turkey	544

Kazakhstan	148	UK	6218
Korea, Rep.	2855	US	14141
Latvia	269	Vietnam	1083

Source: Zephyr Annual Report 2014

Next we will analyze if the taxation features are influencing the numbers of M&A transactions. We used linear regression models. In order to do so, we conducted several regressions by using taxation variables that characterize the stats' economy, variables that can express the taxation level of each state. The variables used are explained in Table 2. We used World Bank Databases in order to extract these variables. The values of the indicators are those recorded in the last 3 years in each state.

Table 2. Dependent variables used in the model

Indicator	Explanation
GDPc	**GDP per capita (USD)** - In regression we used a logarithmic value.
SCTR	**Statutory Corporate Tax Rate** - The tax rate for the highest bracket of all taxes on corporate income.
ETR	**Effective Tax Rate** - The tax rate obtained by dividing the total corporate tax TaxpayerCo pays by its pretax earnings.
LT	**Labor Tax** - The sum of all labor-related taxes payable by Taxpayer, including payroll taxes, mandatory social security contributions, mandatory health insurance, mandatory unemployment insurance, worker's compensation insurance contributions, and any local contributions that are proportional to payroll or number of employees. It is expressed as a percentage of pretax earnings.
OT	**Other Taxes** - The sum of all taxes payable for the taxpayer other than corporate income taxes and labor taxes where the statutory incidence is on the firm. It is expressed as a percentage of pretax earnings.
VAT	**VAT and Sales Tax** - The sum of all consumption tax rates payable or collected by Taxpayer
PIT	**Personal income tax top marginal rate** - The tax rate for the highest bracket of tax on personal income. Only taxes at the national level are included.
NrTax	**Number of tax payments** - The tax payments indicator reflects the total number of taxes paid
Bussden	**Business density per 100 people** - The number of limited liability corporations (or their country-specific equivalent) legally registered divided by the working-age population (total population aged 15 to 64).

The descriptive statistics show trends in taxation at a multinational level. The statutory corporate tax rate has an average value of 28.1% with a high values in US and Japan and low value in Bulgaria, Ireland, Romania, Baltic countries, etc. This trend is also registered in case of effective tax rate where surprisingly in some countries the amount of taxes paid by at a corporate level drops under 5 percent (Lithuania, Slovak republic, etc). The VAT has an average level around 16%, with high levels in France, Norway, Switzerland, and low level in Asian countries. The number of tax payments is high in Romania, Russia, China and low in UK, US and Nordic countries, but record a average value of 27 taxes to be paid for a company.

Table 3. Descriptive statistics

	Mean	Median	Standard deviation	Max.	Min.
GDPc	29735.3	21844.74	23479.94	100818.5	1498.87
SCTR	28.10%	29.50%	0.0751	45.20%	12.50%
ETR	16.16%	16.50%	0.0601	28.66%	4.14%
LT	17.43%	14.80%	0.0980	37.65%	0.00%
OT	1.13%	0.52%	0.0137	5.26%	0.00%
VAT	16.80%	18.00%	0.0573	27.20%	5.00%
PIT	35.87%	37.00%	0.1152	60.00%	11.50%
NrTax	27.61	2300.00%	19.1385	8900.00%	300.00%
Bussden	6.22	559.25%	3.9147	1577.58%	9.73%

4. Results

In this section we tested whether the taxation features of an economy can influence the behaviour of investors in terms of mergers and acquisitions. As presented before, we used the linear regression model to analyze if taxation factors mentioned above influence the number of mergers and acquisitions. The study is made on 46 countries of the world, and we used mainly the values recorded for 2014 on every economy. The results are presented in Table 4.

Table 4. The model estimated results

This table estimates if taxation features influence the number of the M&A transactions. The M&A market data is provided by Zephyr Database for the year 2014 and the dependent variables used in the model are provided by the World Bank database. We used the logarithmic value for the number of M&A transaction. We did not consider in the same regression the variables correlated at a higher level than 0.4. T-statistics are in parentheses. The symbols *, **, *** represent significance levels of 10%, 5% and 1%.

	(1)	(2)	(3)	(4)
Variable				
GDPc	**0.45****	**0.35***		
	(2.15)	**(1.91)**		
SCTR		**8.28*****		**7.33*****
		(3.21)		**(3.41)**
ETR	**5.02***		**5.09***	
	(1.74)		**(1.77)**	
LT		0.56		0.34
		(0.26)		(0.18)
OT	**-31.21*****	**-20.94****	**-29.31****	**-21.07***
	(-2.55)	**(-2.28)**	**(-2.13)**	**(-1.86)**
VAT	-1.87		-2.01	
	(-0.55)		(-0.58)	
PIT	1.75	0.63	1.76	0.87
	(0.88)	(0.39)	(1.06)	(0.63)
Nrtax			**-0.03***	**-0.02***
			(-1.89)	**(-1.61)**
Bussden	-0.05	-0.05	-0.03	-0.03
	(-0.63)	(-0.66)	(-0.49)	(-0.58)
INTERCEPT	0.68	0.27	**6.04*****	**4.64*****
	(0.32)	(0.15)	**(4.71)**	**(4.87)**
R-squared	**27.87%**	**36.66%**	**34.74%**	**39.83%**
Number of observations	**46**	**46**	**46**	**46**

The results show that the taxation indicators of an economy can influence the investor behaviour in cases of mergers and acquisition. From the beginning we can see that the GDP per capita is a determinant factor for the number of M&As. We expected that because many of the transactions are placed in developed countries where this indicator has high values.

When we analyze the explicit taxation variables, the results show that both statutory corporate tax rate and the effective tax rate have a positive effect on the number of mergers and acquisition. This results can be due to the fact that usually in develop countries the corporate tax has a higher value so we cannot draw a conclusion that investors do not take into account the corporate tax value when they decide a mergers of a acquisition.

On the other hand, the other taxes variable has a negative effect on the investors' behaviour. So companies are more willingly to invest in countries where other taxes except corporate income taxes and labour taxes have a low value. A possible explanation can be that investors feel safer in a clear tax environment where

other taxes, besides the widely known ones, are a minimal level in order to reach their investment forecast. This is somehow reflected also in the number of taxes paid by a company in a specific country. The level of mergers and acquisitions is higher where there are a few taxes to be paid, not lower if there are a lot of taxes imposed by the authorities.

The labour tax and personal income tax do not influence the level of mergers and acquisition so we can say that companies are more interested in the taxes that can influence their profits and not in those of the employees.

5. Conclusions.

The aim of the study was to analyse if taxation indicators can influence the level of merger and acquisition from the investors' behaviour point of view. The results showed that statutory corporate tax rate, the effective tax rate, other taxes besides corporate income and labour taxes and the number of taxes paid by a taxpayer are significant in explaining the number of mergers and acquisitions in the world.

Further research will analyze if the possibility of legal tax avoidance and the capital transfer tax can influence the decision of an investors and the mergers and acquisition number and value. Also a more elaborate analysis can be done to see if there are other corporate taxation features that can have an impact on the investors' behaviour.

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A new approach to modeling claims due to natural hazards

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Abstract. United Nations International Strategy for Disaster Reduction defines risk of natural disaster as "a potentially damaging phenomenon that may lead to loss of life or injury, property damage, social and economic disruption or environmental degradation". Each hazard is characterized by location, intensity, frequency and probability. It is interesting to study inter-arrival time between two disasters in a vulnerable geographic area. In this article, a new approach to model inter-arival time between two disasters based on Stoynov distribution and process is considered.

Key words*:* risk; flood; Stoynov distribution; Stoynov process
MSC 2010: 60G51, 97K60

1. Introduction.

United Nations International Strategy for Disaster Reduction defines risk of natural disaster as "a potentially damaging phenomenon that may lead to loss of life or injury, property damage, social and economic disruption or environmental degradation". Each hazard is characterized by location, intensity, frequency and probability. It is interesting to study inter-arrival time between two disasters in a vulnerable geographic area. In this article, a new approach to model inter-arival time between two disasters based on Stoynov distribution and process is studied. The approach is firstly presented in Stoynov, Zlateva and Velev (2015). In this article, the approach is further investigated

The article is organized as follows.

In Section 2, Stoynov type distribution and process are shortly presented. In section 3, applications of Stoynov process to model inter-arrival time of natural hazards are considered.

2. Stoynov distributions and Stoynov process.

We say that a random variable ξ with probability mass function $f_{\xi}(x)$ has distribution of $ST(n,\beta)$ family and denote this fact $\xi \in ST(n,\beta),$ if the probability mass function of ξ is given by the formula

$$f_{\xi}(x)=\begin{cases}\sum_{k=1}^{n+1} P(D^n=k)\, f_{\xi}(x \mid D^n=k)=\sum_{k=1}^{n+1} P(D^n=k)\, f_{G^k}(x), x\geq 0\\ 0, x<0.\end{cases}$$

where G^k are random variables with probability mass function $f_{G^k}(x)=f(k,\beta)$ and D^n are positive integer mixing random variables.

Here for G^k we may adopt different families of distribution.

In this article, the case of Stoynov family of first kind is considered where

$$G^k \in \Gamma(k,\frac{1}{\beta}) \equiv Erlang(k,\frac{1}{\beta}),$$

i. e. $\xi \mid D^n \equiv Erlang(D^n,\frac{1}{\beta}).$ Correspondingly, D^n is a random variable, taking values $k=1,\ldots,(n+1)$ with probabilities $P(D^n=k)=\frac{C(n,\beta)n!}{\beta^k(n-k+1)!}, k=1,\ldots,(n+1)$ where the coefficients $C(n,\beta)$ are given by the formulas:

$$C(n,\beta)=\frac{1}{I(n,\beta)},$$

$$I(0,\beta)=\frac{1}{\beta},$$

$$I(n,\beta)=\frac{1}{\beta}+\frac{n}{\beta}I(n-1,\beta),n=1,2,\ldots$$

Also, variables $\tilde{D}^n=D^n-1$ can be introduced taking values $k=0,\ldots,n$ with probabilities

$$P(\tilde{D}^n=k)=\frac{C(n,\beta)n!}{\beta^{k+1}(n-k)!},k=0,\ldots,n.$$

Then the probability mass function $f_\xi(x)$ of ξ may be presented also by the formula

$$f_\xi(x)=\begin{cases}\sum_{k=0}^{n}P(\tilde{D}^n=k)\,f_\xi(x\mid\tilde{D}^n=k)=\sum_{k=0}^{n}P(\tilde{D}^n=k)\,f_{G^{k+1}}(x),x\geq 0\\ 0,x<0.\end{cases}$$

If a random variable has Stoynov distribution of first kind, we will denote this fact $\xi\in ST1(n,\beta).$

If in $ST1(n,\beta)$ we enforce $D^n=k,$ i. e.

$$P(D^n=k)=1,P(D^n=i)=0,1\leq i\leq k-1<k+1\leq i\leq n+1,$$

which may be considered as degenerate Stoynov distribution of first kind, we actually obtain Erlang distribution, i. e. $\xi\in Erlang(k,\frac{1}{\beta}).$

$ST1(n,\beta)$ distribution can be considered as a special kind of generalized gamma distribution (Stoynov, 2011).

We say that a random variable Λ has generalized gamma distribution if its probability density function is given by

$$f_\Lambda(x)=\frac{u^{s-\alpha}}{\Gamma(\alpha)U(\alpha,\alpha+1-s,u\beta)}e^{-x\beta}x^{\alpha-1}(u+x)^{-s},\ x>0$$

where $-\infty<s<+\infty,\alpha>0,\beta>0,u>0$ and

$$U(a,b,z)=\frac{1}{\Gamma(a)}\int_0^\infty e^{-zt}t^{a-1}(1+t)^{b-a-1}dt,a>0,z>0$$

is the integral representation of the hyper-geometric function of second kind (Zamani and Ismail, 2010). In this case, for Λ we write $\Lambda\in G\Gamma(\alpha,\beta,u,s).$

To remember that we say that the random variable ξ has a gamma distribution and denote $\xi\in\Gamma(\alpha,\beta)$, if its probability mass function is given by

$$f_\xi(x)=\begin{cases}\frac{\beta^\alpha}{\Gamma(\alpha)}x^{\alpha-1}e^{-\beta x},\ x\geq 0\\ 0,\ x<0\end{cases}.$$

Here $\Gamma(\alpha)$ is defined by $\Gamma(\alpha)=\int_0^\infty x^{\alpha-1}e^{-x}dx.$

We see that $\Gamma(\alpha,\beta)=G\Gamma(\alpha,\beta,u,s=0).$

Actually, we have that

$$ST1(n,\beta)=G\Gamma(\alpha=1,\beta,u=1,s=-n).$$

The exponential distribution is a special kind of $ST1(n,\beta)$ distribution are $ST1(0,\beta)\equiv Exp(\beta)$. To recall that the random variable ξ has exponential distribution and denote $\xi\in Exp(\beta)$, if its probability mass function is given by

$$f_{\xi}(x)=\begin{cases}\beta e^{-\beta x}, & x\geq 0\\ 0, & x<0.\end{cases}$$

The case $ST1(1,\beta)\equiv Lindley(\beta).$ can be considered as a weighted version of exponential distribution with weighting function $w(x)=1+x.$ We say that the random variable ξ has Lindley distribution and denote $\xi\in Lin(\beta)$, if its probability mass function is given by

$$f_{\xi}(x)=\begin{cases}\dfrac{\beta^2}{\beta+1}(1+x)e^{-\beta x}, & x\geq 0\\ 0, & x<0\end{cases}.$$

The case $n=2$ leads to $ST1(2,\beta)$ distribution which can be defined as weighted exponential distribution by the weight function $w(x)=(1+x)^2.$

We say that the random variable ξ has $ST1(2,\beta)$ distribution and denote $\xi\in ST1(2,\beta)$, if its probability mass function is given by

$$f_{\xi}(x)=\begin{cases}\dfrac{\beta^3}{\beta^2+2\beta+2}e^{-\beta x}(1+x)^2, & x\geq 0\\ 0, & x<0.\end{cases}$$

To check that the weight function in the definition of the distribution is the right one, we could calculate $Ew(\xi)=\dfrac{\beta^2+2\beta+2}{\beta^2}.$

We say that a process $X(t)$ is a Stoynov process of first kind or $ST1(n,\beta)$ process, and denote this fact $X(t)\in ST1(t;n,\beta),$ if for it:

1) $X(0)=0.$

2) $X(t)$ is pure jump process with jumps at times $T_{i'}, i=1,2,\ldots$ and jump sizes

$$\Delta X(T_i)=1.$$

3) The intervals between two jumps are

$$\tau_i=T_i-T_{i-1}\in ST1(n-1,\beta), i=0,1,\ldots,T_0=0.$$

We say that $X(t)$ is compound $ST1(n,\beta)$ process if we replace condition 3) with condition:

3') $X(t)$ is pure jump process with jumps at times $T_{i'}, i=1,2,\ldots$ and jump sizes $\Delta X(T_i)=Y_i,$ where Y_i are independent and identically distributed random variables.

3. Applications of Stoynov process to model inter-arrival time of natural hazards.

In Stoynov, Zlateva and Velev (2015), example with modeling inter-arrival time between floods by Stoynov processes is presented.

4. Conclusion.

Stoynov distributions presented in the article posses some suitable properties for modeling process of arrival of floods.

The present work may be extended for typical (not degenerated) ST processes as well as by studying other choices of G^k.

For example, we may choose $G^k\in NB(k,e^{-\beta}).$ In this case, $\xi\mid D^n\equiv NB(D^n,e^{-\beta})$ and we obtain a distribution which we will call $ST2(n,\beta)$ distribution.

As another example we may consider $G^k\equiv\delta_k(x)$ - random variable which takes value k with probability one. Then $\xi\equiv D^n\in D^n(\beta).$ In this case, we say that random variable ξ has $ST3(n,\beta)$ distribution and denote $\xi\in ST3(n,\beta).$

These processes with suitable parameters can also be used to model times of occurrence of floods.

Further step is to test the model against real data and to check other proposals for the first parameter of Stoynov distribution and process.

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Securitized Instruments During the Crisis

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Abstract.
A central role in the recent financial crisis was played by Collateralized Debt Obligations (CDOs) and private-label Mortgage-Backed Securities (MBS), backed by nonprime loans. However, very few studies have been done about the underlying forces that drove investor demand for these securitizations. Using micro-data on insurers' and mutual funds' bond holdings, considerable heterogeneity can be found in investor demand for securitizations in the pre-crisis period. The argument is that both investor beliefs and incentives help to explain this variation in demand. This data paints a more uniform picture of investor behavior in the crisis. Consistent with theories of optimal liquidation, investors largely traded in more liquid securities such as government-guaranteed MBS to meet their liquidity needs during the crisis and distanced themselves from less liquid securities.
Keywords: securitization, CDO, MBS, liquidity, crisis

1. Introduction.

Collateralized debt obligations (CDOs) and mortgage-backed securities (MBS) backed by nonprime loans have been at the center of the recent financial crisis. These securitized assets have grown exponentially from 2003 to early 2007 before collapsing in mid-2007. Prices for these products fell abruptly from late 2007 to 2008, inducing large losses for financial intermediaries and generating a full-blown systemic crisis in late 2008. This is a working paper, the results shown here being a work in progress.

2. Evolution.

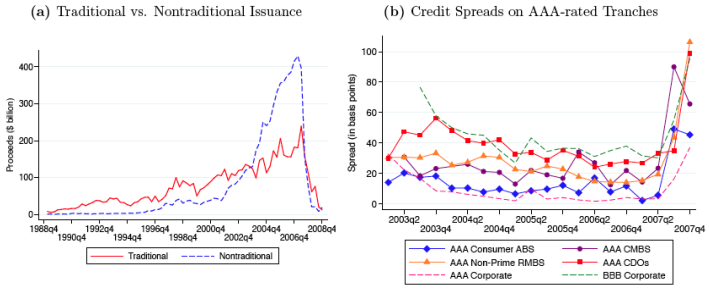
The issue at hand is not the historic evolution of events, but rather the reasons behind the rise and subsequent fall in investor demand for CDOs and nonprime MBS. Some explanations for the pre-crisis run-up in demand could have to do with distortions that affected either investor beliefs or incentives. Beliefs-based explanations argue that a misunderstanding of the risks of investing in securitizations helped drive investor demand, while incentives-based explanations emphasize agency problems between professional investors and their principals4.

The collapse in demand during the crisis can be argued either based on fire sales or a buyers' strike that amplified the initial fundamental shock created by declining home prices. In fire sales-based explanations, the fundamental shock was amplified by forced sales from investors with high valuations to others with low valuations, while in buyers' strike-based explanations, it was amplified by a refusal to trade due to adverse selection or other frictions5.

This study focuses on nontraditional securitizations, which consisted of CDOs and MBS backed by nonprime home mortgages. While we have been seeing traditional securitizations backed by prime residential mortgages, commercial mortgages, and consumer debt for decades, nontraditional securitizations are a more recent emergence. And, as Figure 1(a) shows, the rapid growth in securitization during the 2003–2007 boom was concentrated in nontraditional products.

Fig. 16 Issue and Spreads of Traditional and Nontraditional Securitizations

[4] See Coval, Jurek, and Stafford (2009) and Gennaioli, Shleifer, and Vishny (2012) for beliefs-based explanations. For incentive-based explanations, see Rajan (2005), Acharya and Richardson (2009), and Merrill, Nadauld, and Strahan (2014).
[5] For theoretical models of fire sales, see Shleifer and Vishny (1992, 2011), Kiyotaki and Moore (1997), Lorenzoni (2008), Brunnermeier and Pedersen (2009), Geanakopolos (2009), Stein (2012), Brunnermeier and Sannikov (2014), and Dávila (2014). See Dang, Gorton, and Holmstrom (2013), Hanson and Sunderam (2013), Milbradt (2012), and Morris and Shin (2012) for models of buyers' strikes
[6] Chernenko. S, Hanson S.G., Sunderam A. (2014)



This figure shows quarterly issuance and credit spreads on traditional and nontraditional securitizations. The underlying data is from SDC. Panel A plots quarterly issuance of traditional and nontraditional securitizations. Traditional securitizations include CMBS, prime RMBS, consumer ABS, and other ABS. Nontraditional securitizations include non-prime RMBS and CDOs. Panel B plots the credit spreads on newly issued AAA-rated securitizations versus the spreads on corporate bonds. Each quarter the value-weighted average credit spread on securitizations is computed, based on the underlying collateral. This average is computed for traditional consumer asset-backed securities backed by credit card loans, automotive loans, student loans, and other personal loans ("Consumer ABS"); private residential mortgage backed securities (RMBS) backed by subprime and Alt-A mortgages ("Non-Prime RMBS"); commercial mortgage backed securities (CMBS); and collateralized debt obligations ("CDOs"). To avoid benchmarking issues attention is restricted to the spreads on floating rate notes indexed to 1-, 3-, and 6-month LIBOR. For reference the average secondary spreads over LIBOR (based on interest rate swaps) on 3-year AAA and BBB-rated corporate bonds are plotted from Barclays.

During the 2003–2007 boom there was considerable heterogeneity across investors in their demand for nontraditional securitizations. At a macro level, while both insurers and mutual funds increased the share of their portfolios allocated to nontraditional securitizations, these increases were not inline with the broader credit market; as issuance boomed, insurers and mutual funds became increasingly underweight relative to the whole market.

Which investor characteristics were associated with larger holdings of nontraditional securitizations? Chernenko. S, Hanson S.G., Sunderam A. (2014) start with mutual funds and estimate cross-sectional regressions relating portfolio weights in nontraditional securitizations to a variety of fund and manager characteristics. Among mutual funds with the same objective, fund manager experience stands out relative to other fund characteristics: experienced managers invested significantly less in nontraditional securitizations than inexperienced managers. What explains the relationship between fund manager experience and securitization holdings? As suggested by the growing literature on reinforcement learning, the greater demand of inexperienced managers may have been due to differences in beliefs7. Consistent with this, managers who were active during the credit market disruptions following the 1998 Russian default invested significantly less than other managers. Personal experience during the market disruption appears to have a significant importance: the effect appears to be driven by managers whose funds suffered poor returns or heavy outflows in 1998. Overall, these results suggest that beliefs, influenced in part by prior experiences, played an important role in driving mutual fund demand for nontraditional securitizations. Holdings of nontraditional securitizations were higher among larger insurers and insurance companies that had fixed income portfolios managed by external managers. Among the largest 100 insurers, which together hold almost 90% of total assets, holdings of nontraditional securitizations were concentrated among poorly capitalized insurers. These findings are consistent with the notion that misaligned incentives played a role in driving insurer demand for nontraditional securitizations. Among small insurers, the key principal-agent relationship was between the insurer, which may have lacked the expertise necessary to directly invest in securitizations, and external portfolio managers. Among larger insurers, the key principal-agent relationship was between creditors and equity holders.

What happened to investor demand for securitizations after the onset of the crisis in mid-2007? For both mutual funds and insurance companies trading in nontraditional securitizations declined through the boom from 2003–2007 and was extremely low during the 2007–2009 bust. On the contrary, trading in corporate bonds remained relatively stable from 2003–2010. This is consistent with the buyers' strike hypothesis, which emphasizes market freezes due to adverse selection or other frictions. However, mutual funds with large holdings of nontraditional securitizations suffered larger outflows during the crisis. Consistent with theories of fire sales where investors follow optimal liquidation strategies, funds met these redemptions primarily by selling liquid government-guaranteed MBS and not by selling illiquid nontraditional securitizations.

[7] See, for instance, Greenwood and Nagel (2009), Malmandier and Nagel (2011, 2014), and Campbell, Ramadorai, and Ranish (2013).

All in all, the literature on investor holdings of securitizations presents a multifaceted picture of the boom in nontraditional securitization and a more uniform picture of the bust. Among mutual funds, beliefs appear to have been a key driver of holdings of nontraditional securitizations, while incentives appear to have played an important role among insurers. In the bust, investors behaved similarly. They traded very little in nontraditional securitizations, preferring to transact in more liquid securities to meet their liquidity needs.

3. Conclusions.

Nontraditional securitizations—nonprime RMBS and CDOs—were at the heart of the recent financial crisis. The demand for these securities helped feed the housing boom during the early and mid-2000s, while rapid declines in their prices during 2007 and 2008 generated large losses for financial intermediaries, ultimately imperiling their soundness and triggering a full-blown crisis.

A series of facts about the demand for nontraditional securitizations is presented in this paper, summarized from the literature on the subject. First, heterogeneity across securitization types and investors is key to understanding the crisis. Beliefs appear to have been an important driver of mutual fund holdings of nontraditional securitizations. Although they did not face stronger performance-flow relationships, inexperienced mutual fund managers invested significantly more in these products than experienced managers. Consistent with the idea that beliefs—shaped by past firsthand experiences—played an important role, managers who had suffered through the market dislocations of 1998 invested substantially less in nontraditional securitizations than those who had not.

For insurance companies, incentives appear to have played an important role, though the nature of the relevant incentive conflict seems to have varied across small and larger insurance firms. Among small insurers, the key principal-agent relationship was between the insurer, which may have lacked the expertise necessary to directly invest in securitizations, and external portfolio managers. Among larger insurers, the key principal-agent relationship was between debt and equity holders.

While investor heterogeneity is important in the boom, the story of the bust is more uniform. The bust is characterized by a decline in aggregate trading volume for nontraditional securitizations. Consistent with the idea that adverse selection and other frictions contributed to a buyers' strike in these markets, prices fell significantly, even though very little trade took place. Insurers and mutual funds that needed liquidity traded largely in the market for GSE MBS. These results underscore the importance of optimal liquidity management in the context of fire sales.

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Communication, source of management improvement through human capital interaction

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Abstract.
The key to success is given by a concerned and honest communication as it represents both the essence of social behavior and relationships between people and the foundation of individual and entrepreneurial success. However, organizational communication constitutes leverage the success of any management system by the fact that is present in all actions undertaken by the organization. Practice shows that the basis for the competitiveness of an organization is effective management of human capital. The success of a company is in individual performance leading to a generalized victory. The level of employee performance is dependent on both the stimulus, training and the implementation of tasks.
Keywords: organizational communication, performance, human capital, motivation

1. Introduction.

Interpersonal communication is a field of study with a much greater importance than that of studying other areas of human behavior. Penetration and understanding and facilitate open communication system knowledge and personal way to those others, being able to clarify the hierarchy of people in the society according to certain criteria of value.

History and development of studying interpersonal communication system has undergone several major periods, roughly demarcated: Classical period (500 BC - 400 AD); Middle Ages and the Renaissance period (400 - 1600); modern period (1600 - 1900); Add to this, of course, the contemporary period. (Voiculescu, 1991)

In the nineteenth century literature in communication it is quite poor. Still keeping the contribution in the sphere of transmitting the message - such as that of Henry Innes, whose book "The rhetorical Class Book" (1834) - or within deontology, for example, the book of John Stewart Mill, "On Liberty of Thought and Discussion "(1859) or that of Herbert Spencer," Philosophy of Style "(1871).

The evolution theory of human communication system thus through a period of over 2,000 years to get into this century with a number of unknown and yet most essential: how emotions act on communication; report that forms between reason and behavior; motivations and their interdependencies communication. All these topics unsearchable are still waiting to be solved, for a better understanding of themselves and for rational actions take precedence over the primary manifestations of human behavior.

Based on the human capital theory, initiated by representatives of the new school in Chicago in the second half of the twentieth century, under the slogan "Man the most precious wealth of the country", the paper aims to highlight the importance of communication through interaction of the human capital leading to more competitive management.

Human capital is not a one-dimensional concept, but means something different to each stakeholder individually. If the business world is the economic value of human capital skills and abilities an employee policy-makers who sees human capital as an engine of economic growth. Traditionally, of the human capital is considered in terms of investment in education and training, but in recent years, health (including the physical and mental health) has come to be seen as a fundamental component of the human capital. Everything looked in social and economic context of the company which actually determines the value of the human capital.

Jacob Mincer uses the term "human capital" in the title of an article which he published in 1958, "Investing in human capital and personal income distribution" in The Journal of Political Economy (Mincer, 1958). He considers human capital as having a dual role: on one hand the stock of skills, product training and education / training in the workplace, human capital is a factor of production alongside physical capital and, on the other hand, stock of knowledge as a source of innovation that leads to economic growth.

Gary S. Becker, promoters the human capital on the line, puts the first show that the individual is not simply the ultimate consumer, but a true manufacturer, which through education and training, investing in human capital practice. Human capital theory is the fund's thought Becker, enabling it to address the economic outlook both normal consumption (food, clothing, leisure, etc.) and personal values determinants of human behavior (love, hate, altruism, etc.). In his view, the individual is a real firm, using scarce resources (employment and household family members) and that labor produces rewarding and organization that requires investment and calculations based on relative prices, the cost of the time etc. (Schultz et alii, 1961)

The concept of "human capital" is an old one, Adam Smith is the one that shows how important people skills acquired as a result of education and division of labor, skills that give wealth a nation.

The term of communication is derived from the Latin "communicare" which means "to agree, to share, to put together, to mix"[1]. Constantin Noica links word communication with the word Eucharist or Communion to delineate the human communication between machines. While the machines transmit data and receive signals as people in the communication process agree sensations, emotions, opinions and facts. Thus, communication is more than just "make known, to let you know, be about" as defined in the Explanatory Dictionary of the Romanian language.

Communication can be defined as a transactional process through which people transfer energy, emotions, feelings and changing the meanings[2]. Its goal is to make the other party feel, think or behave in a certain way. For communication to be able to meet the target, must meet the following conditions: the message delivered to be heard, the received message to be understood, the message understood to be accepted, the message agreed to have the expected impact, to provoke a reaction, a change of attitude, thinking or behavior.

During the communication, the transmitter of the reflected scheme - transmission channel - receiver, the information does not circulate perfect and suffer the following losses:

- a loss of weight - determines that only a part of the message is received and understood by the receiver;
- a loss of quality - after its message may prejudge the interpretation skips the received message.

Communication is our context, the process by which a system or an organization is established, maintained and modified by certain signals which act according to common rules.

In an organization, communication is a foothold in achieving common goals while having a crucial role in existence, preservation and development of interpersonal relationships. Therefore, group activities are impossible without the existence deployed regardless of the communication and the organization operates, the communication is included in all activities. Thus, the authors have encountered obstacles in conceptual delimitation of organizational communication process and to determine its role in an organization.

Therefore, they were identified and unanimously accepted five roles associated with this process:

- management functions without communication feature are operational lose because any strategic process is based on messaging. Thus, communication becomes essential for achieving organizational success while being highest manager responsibility;
- is achieved through communication and personal relationships are kept within the collective that aimed messaging for accurate self-assessments against the requirements of managerial and organizational culture;
- feedback helps to correct personal and general results of the institution;
- the communication is situated at the motivation process. The correct identification, use and knowledge of various categories of needs and performance incentives lead to the development of labor;
- communication helps create and maintain effective relationships with both sincere and external environment and within the organization between managers and staff located at the lower hierarchical levels and / or between staff on the same hierarchical level.

,,The overall objective of communication in an organization is to determine a certain inner change and facilitate adaptation, both inner and outer, to this change. This objective is to influence activities in a manner that positively affect the company's situation". (Bălănică, Comunicare în afaceri). Organizational communication creates and maintains personality organization and ensures an unique identity to competition.

Internal communication includes all communication documents concluded within an organization, useing the special media from one institution to another. Regarding the formal, internal communications includes managerial communication on the presence of the manager within the communication process. In terms of informal, internal communication is associated with communication within the staff, specifically between employees at the same level or hierarchical in different departments.

The main roles of internal communications are of:

- to present different financial results and to inform the basis of decisions;
- to convey different information and to clarify the duties;
- to explain new projects, ideas;
- to motivate cooperation and involvement in achieving the objectives

In the upward salary communication the information flow is propagated in reverse, from the base to lime organization through messages addressed to staff and managers at the highest levels. This type of communication channel plays useful information for management control and decision making. "Less institutionalized, this information often follows direct informal paths (verbal exchange, letter, manifest) or indirect (rumors, gossips)" (Radu, 2003).

Horizontal communication occurs between departments located in the management system at different hierarchical levels. This allows the aggregation of staff and creating that sense of belonging that lead indirectly to improving the production process.

The practical realization of the communication process is preceded by choosing the most appropriate means of communication, each means having a succession of specific characteristics that determines the compatibility of each depending on the message content, internal culture and receiver characteristics.

Choosing the right media is when taking into account the internal culture of the institution. Thus, "looking for a better correspondence between the means employed and the receiver whom the message is intended compel the information officers to inspire a step type marketing and segment employees according to the receptivity place that means written, oral or audiovisual work" (Radu, 2003).

2. Defining the performance evaluation process in order to effectively utilize human resources.

The performance of the company is the result of the performance of staff. Performance evaluation called and evaluations of the results being defined more broadly as "any act or some type of cognitive activity by an evaluator assessed or estimated performance of a person in relation to the performance standards set and representation his mental with his own value system or his own thinking on the obtained performance. "(Lefter et alii, 2012)

Performance evaluation is the most important activity of human resources management at the same time the process of determining the effectiveness of personnel in an organization to the objectives and standards. The evaluation becomes a management control to achieve organizational goals.

Evaluation work carried out at a frequency too high can cause a negative effect on the company because by constantly checking staff will feel lack of confidence. It is recommended that frequent evaluation activities to be replaced by communication.

By rating:

- is determined the performance of the progress achieved and areas of improvement thereof;
- there is a measurement of the achievement of performance expectations, and skills or behaviors that caused their implementation;
- carry out a dialogue between the employee and his superior, and if there are divergent views regarding the final marks, the decision belongs to the superior.

In the remit of human resources the managerial practice demonstrates that performance evaluation is important both in the recruitment and selection of staff and in the decisions of remuneration, promotion and dismissal of employees. Thus, within organizations arose two systems of the performance evaluation: formal and informal assessment evaluation.

Informal evaluation is the relationship between manager and staff daily being carried out by examination or simple conversation. One of the concerns of managers is to assess and supervise subordinates, so in making decisions they rely mostly on intuition and evidence of performance. The biggest disadvantage of this form of evaluation is the high degree of subjectivity.

Formal evaluation also called systematic evaluation requires performance evaluation within the organization in a planned formal methodologies to provide informed as fair, accurate and in compliance with the legislation. This form of assessment is specific to medium and large having the advantage of a continuous assessment, regular and systematic performance and higher degree of objectivity.

The results of the performance evaluation of employees can be affected by various errors of meeting. Usually they belong to the evaluators, but also are influenced by the methods of assessment used. The most common errors of assessment are:

• Tolerance or excessive requirements;
• Mediocrity of the subordinates in terms of performance achieved;
• Changing standards used by an employee to another;
• Overestimating an assessment criterion considered decisive and ignoring others;
• Demonstration performance of recently completed and barring important past events;
• Subjectivity of the evaluator.

2. Job satisfaction of employees. The relationship between motivation and performance

Job satisfaction, in modern approach to human resources management occupies an important place as one of the essential components of which depends on the overall efficiency of labor. In the specialty literature, motivational strategies play a crucial market in the existence of the organization. Also, on the notion of job satisfaction have been made numerous studies that were aimed at finding a universal definition in this regard ,,job satisfaction is defined from the psychosociological point of view the result of the difference between what the individual gets as rewards of the work and what he estimated he should get. When there is a tie between two rewards, results a state of complete satisfaction. "(Radu, 2003)

On relationship satisfaction - performance, Romanian specialist Zlate outlined the following conclusions:

-,, satisfaction, although linked to performance, is no longer conceived as its only cause, but only one of its possible causes;

- The relationship between satisfaction and performance is not constant, but varies according to a number of conditions (complexity of the task, routinely character, social, technological conditions etc.);

- It is considered that, in a climate of tension and conflict cannot achieve substantial and sustainable increases in any of satisfaction or performance, so creating destines organizational climate is one of the most important tasks of managers;

- Looking for new methods of stimulation leading to a concurrent increase both satisfaction and performance "(Lefter et alii, 2012).

In the relationship between motivation and performance, the latter is influenced by motivation being the result produced by it. In the circuit motivation - performance may occur over motivation and under motivation and creates damage in terms of performance. It must be determined the motivational optimum, meaning that critical point where there is diminishing results. According to research on the motivational optimum carried out in 1981 by Bellanger, there is a triangle of motivation. The three peaks are self-confidence, legitimacy and identification. When there is a balance between the three, motivational optimum forms.

Studies on the effect of job satisfaction on productivity are ongoing, and researchers realize for that purpose the correlation between performance systems and satisfaction. The most interesting tentative theoretical approach to relationship satisfaction - performance belongs to March & Simon. Specifically, their model highlights the consequences from adverse effects of a low degree of satisfaction on organizational performance. Also worth mentioning is that their model is only valid provided that employee satisfaction is below forecast. The proposed model of the two has the following assumptions:

- The lower the satisfaction will be, the more intense search behavior of activity programs to replace old ones;
- The more intense search behavior will be, the higher the expected value of the awards;
- The greater expected value of the rewards will be, the higher the satisfaction will be;
- The higher level of aspirations will be, the lower the satisfaction obtained will be." (Radu, 2003)

3. Creating a favorable image.

The image of the organization is built on harmony between performance and communication, this is an equation in which a term cannot miss. In a normal economy, poor performance cannot be "sanitized" long and good performance does not automatically bring a favorable perspective. (Iacob, 2012)

Business Communication contributes to:

• The operationalization of management functions. Reception and forwarding of messages cannot be designed without adequate communication.

• Creating and maintaining relationships between employees.

• Improve overall organizational performance and individual feedback.

• Identifying and knowledge of the needs of employees.

• Proper use of different categories of employee behavior toward ordering incentives for performance.

• The establishment of fair relations, mutual understanding and acceptance between bosses and subordinates.

To better understand how to manage communication must know the types of communication in a company:

• Communication upward - that transmit messages containing: information, suggestions, problems to solve.

• Communication downward - that transmit messages relating to the implementation of strategies: goals, objectives, rules, decisions, practices, procedures, responsibilities.

• Horizontal communication - that transmit messages that aim: coordination of activities, departmental problem solving, achieving interdependence, the fulfillment of tasks. (Nistor, 2006)

4. Conclusion.

Human communication is a process by which two or more people try, through the use of symbols, to exert influence on others consciously or unconsciously, in order to meet their own interests.

We can see that the activities undertaken by a firm basis is the existence of an effective corporate communication and association as a means of concentrating efforts as it forms in all hierarchical levels. We also concluded that man is a vital resource and inexhaustible for the contemporary world and therefore training, evaluation and compensation of employees are decisive elements in determining the profitability of a business that lead simultaneously to the efficient use of labor.

The performance evaluation is a difficult one and subject to controversy, but nevertheless it is one absolutely necessary for an organization. Therefore, for it to be as relevant and its results should be correctly interpreted it takes both the use of innovative techniques evaluations and the usable rationality and common sense in determining the principles for assessing the performance levels the used procedures.

In conclusion, the advantages of the evaluation process will be used to their true potential only if its results are properly handled. Thus, some ideas are emerging in order to improve the conduct of the evaluation meeting. These include:

The idea that in conducting the evaluation process for the manager to count both competences afforded those results within the team and the way in which we obtained those results;

According to another principle, to an appraiser must count only the degree of fulfillment of the contractual obligation job-specific employee. He detrimental subjective assessment based on the manager's opinion is attempted view of its working style of each employee;

One last idea suggests both that the benefits of the assessment must be accepted and understood by both sides of the process and that it increases productivity within society by improving employee skills.

Finally, experience shows that underlying competitiveness of an organization is effective management of human capital. The success of a company is in individual performance leading to a generalized victory. The level of employee performance is dependent on both the stimulus, training and the implementation of tasks.

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Application of Stoynov processes to general reflected surplus models

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Abstract.
In this article, application of Stoynov processes to the general reflected surplus models are considered.
Key words: Stoynov processes, reflected surplus processes

1. Introduction.

Stoynov distribution are introduced in Stoynov (2010) and further considered in Stoynov (2012a, 2012b). Stoynov processes are considered in Stoynov (2013a, 2013b, 2014). In this article, some applications of Stoynov type processes to the general reflected surplus process in wealth and risk modeling are considered.

In Section 2, Stoynov type distribution is defined. In Section 3, Stoynov processes (point processes with Stoynov inter-arrival times) are considered. In Section 4, application of Stoynov processes to general relected surplus model is presented.

2. Stoynov family distributions - ST(n,β).

We say that a random variable ξ with probability mass function $f_{\xi}(x)$ has distribution of $ST(n,\beta)$ family and denote this fact $\xi \in ST(n,\beta),$ if the probability mass function of ξ is given by the formula

$$f_{\xi}(x)=\begin{cases}\sum_{k=1}^{n+1} P(D^n=k)\, f_{\xi}(x \mid D^n=k)=\sum_{k=1}^{n+1} P(D^n=k)\, f_{G^k}(x), x \geq 0\\ 0, x<0.\end{cases}$$

where G^k are random variables with probability mass function $f_{G^k}(x)=f(k,\beta)$ and D^n are positive integer mixing random variables.

Here for G^k we may adopt different families of distribution.

In this article, the case of Stoynov family of first kind is considered where

$$G^k \in \Gamma(k,\frac{1}{\beta}) \equiv Erlang(k,\frac{1}{\beta}),$$

i. e. $\xi \mid D^n \equiv Erlang(D^n,\frac{1}{\beta}).$ Correspondingly, D^n is a random variable, taking values $k=1,\ldots,(n+1)$ with probabilities $P(D^n=k)=\frac{C(n,\beta)n!}{\beta^k(n-k+1)!}, k=1,\ldots,(n+1)$ where the coefficients $C(n,\beta)$ are given by the formulas:

$$C(n,\beta)=\frac{1}{I(n,\beta)},$$

$$I(0,\beta)=\frac{1}{\beta},$$

$$I(n,\beta)=\frac{1}{\beta}+\frac{n}{\beta}I(n-1,\beta), n=1,2,\ldots$$

Also, variables $\tilde{D}^n=D^n-1$ can be introduced taking values $k=0,\ldots,n$ with probabilities $P(\tilde{D}^n=k)=\frac{C(n,\beta)n!}{\beta^{k+1}(n-k)!}, k=0,\ldots,n.$ Then the probability mass function $f_{\xi}(x)$ of ξ may be presented also by the formula

$$f_{\xi}(x)=\begin{cases}\sum_{k=0}^{n}P(\widetilde{D}^{n}=k)\,f_{\xi}(x\mid\widetilde{D}^{n}=k)=\sum_{k=0}^{n}P(\widetilde{D}^{n}=k)\,f_{G^{k+1}}(x), x\geq 0\\ 0, x<0.\end{cases}$$

If a random variable has Stoynov distribution of first kind, we will denote this fact $\xi\in ST1(n,\beta).$

If in $ST1(n,\beta)$ we enforce $D^{n}=k,$ i. e.

$$P(D^{n}=k)=1, P(D^{n}=i)=0, 1\leq i\leq k-1<k+1\leq i\leq n+1,$$

which may be considered as degenerate Stoynov distribution of first kind, we actually obtain Erlang distribution, i. e. $\xi\in Erlang(k,\frac{1}{\beta}).$

We have the following:

Theorem 1. Let $\xi\in ST1(n,\beta).$ Then its probability mass function can be presented as

$$f_{\xi}(x)=\begin{cases}C(n,\beta)e^{-\beta x}(1+x)^{n},\ x\geq 0\\ 0, x<0\end{cases}.$$

Proof: We have:

$$C(n,\beta)e^{-\beta x}(1+x)^{n}=C(n,\beta)e^{-\beta x}\sum_{k=0}^{n}\binom{n}{k}x^{k}=\sum_{k=0}^{n}C(n,\beta)\binom{n}{k}x^{k}e^{-\beta x}=$$

$$=\sum_{k=0}^{n}\frac{C(n,\beta)n!x^{k}e^{-\beta x}}{k!(n-k)!}=\sum_{k=0}^{n}\frac{C(n,\beta)n!\beta^{k+1}x^{k}e^{-\beta x}}{\beta^{k+1}(n-k)!k!}=$$

$$=\sum_{k=0}^{n}\frac{C(n,\beta)n!}{\beta^{k+1}(n-k)!}\frac{\beta^{k+1}x^{k}e^{-\beta x}}{k!}=$$

$$=\sum_{k=0}^{n}P(D^{n}=k+1)\,f_{G^{k+1}}(x)=$$

$$=\sum_{k=1}^{n+1}\frac{C(n,\beta)n!\beta^{k}x^{k-1}e^{-\beta x}}{\beta^{k}(n-k+1)!(k-1)!}=$$

$$=\sum_{k=1}^{n+1}\frac{C(n,\beta)n!}{\beta^{k}(n-k+1)!}\frac{\beta^{k}x^{k-1}e^{-\beta x}}{\Gamma(k)}=\sum_{k=1}^{n+1}\frac{C(n,\beta)n!}{\beta^{k}(n-k+1)!}\frac{\beta^{k}x^{k-1}e^{-\beta x}}{(k-1)!}=$$

$$\sum_{k=1}^{n+1}P(D^{n}=k)\,f_{G^{k}}(x).$$

□

$ST1(n,\beta)$ distribution can be considered as a special kind of generalized gamma distribution (Stoynov, 2011). We say that a random variable Λ has generalized gamma distribution if its probability density function is given by

$$f_{\Lambda}(x)=\frac{u^{s-\alpha}}{\Gamma(\alpha)U(\alpha,\alpha+1-s,u\beta)}e^{-x\beta}x^{\alpha-1}(u+x)^{-s},\ x>0$$

where $-\infty<s<+\infty,\alpha>0,\beta>0,u>0$ and

$$U(a,b,z)=\frac{1}{\Gamma(a)}\int_{0}^{\infty}e^{-zt}t^{a-1}(1+t)^{b-a-1}dt, a>0, z>0$$

is the integral representation of the hyper-geometric function of second kind (Zamani and Ismail, 2010). In this case, for Λ we write $\Lambda\in G\Gamma(\alpha,\beta,u,s).$

To remember that we say that the random variable ξ has a gamma distribution and denote $\xi\in\Gamma(\alpha,\beta)$, if its probability mass function is given by

$$f_{\xi}(x)=\begin{cases}\dfrac{\beta^{\alpha}}{\Gamma(\alpha)}x^{\alpha-1}e^{-\beta x},\ x\geq 0\\ 0,\ x<0\end{cases}.$$

Here $\Gamma(\alpha)$ is defined by $\Gamma(\alpha)=\int_0^{\infty}x^{\alpha-1}e^{-x}dx.$

We see that $\Gamma(\alpha,\beta)=G\Gamma(\alpha,\beta,u,s=0).$

Actually, we have that

$$ST1(n,\beta)=G\Gamma(\alpha=1,\beta,u=1,s=-n).$$

Another generalization of $ST1(n,\beta)$ distribution is presented in Stoynov (2012a, 2012b).

The exponential distribution is a special kind of $ST1(n,\beta)$ distribution are $ST1(0,\beta)\equiv Exp(\beta)$. To recall that the random variable ξ has exponential distribution and denote $\xi\in Exp(\beta)$, if its probability mass function is given by

$$f_{\xi}(x)=\begin{cases}\beta e^{-\beta x},\ x\geq 0\\ 0,\ x<0.\end{cases}$$

The case $ST1(1,\beta)\equiv Lindley(\beta).$ can be considered as a weighted version of exponential distribution with weighting function $w(x)=1+x.$ We say that the random variable ξ has Lindley distribution and denote $\xi\in Lin(\beta)$, if its probability mass function is given by

$$f_{\xi}(x)=\begin{cases}\dfrac{\beta^2}{\beta+1}(1+x)e^{-\beta x},\ x\geq 0\\ 0,\ x<0\end{cases}.$$

The case $n=2$ leads to $ST1(2,\beta)$ distribution which can be defined as weighted exponential distribution by the weight function $w(x)=(1+x)^2.$

We say that the random variable ξ has $ST1(2,\beta)$ distribution and denote $\xi\in ST1(2,\beta)$, if its probability mass function is given by

$$f_{\xi}(x)=\begin{cases}\dfrac{\beta^3}{\beta^2+2\beta+2}e^{-\beta x}(1+x)^2,\ x\geq 0\\ 0,\ x<0.\end{cases}$$

To check that the weight function in the definition of the distribution is the right one, we could calculate $Ew(\xi)=\dfrac{\beta^2+2\beta+2}{\beta^2}.$

3. Stoynov ST(n,β) processes.

We say that a process $X(t)$ is a Stoynov process of first kind or $ST1(n,\beta)$ process, and denote this fact $X(t)\in ST1(t;n,\beta),$ if for it:

1) $X(0)=0.$

2) $X(t)$ is pure jump process with jumps at times $T_{i'},i=1,2,\ldots$ and jump sizes

$$\Delta X(T_i)=1.$$

3) The intervals between two jumps are

$$\tau_i=T_i-T_{i-1}\in ST1(n-1,\beta),i=0,1,\ldots,T_0=0.$$

We say that $X(t)$ is compound $ST1(n,\beta)$ process if we replace condition 3) with condition:

3') $X(t)$ is pure jump process with jumps at times $T_{i'},i=1,2,\ldots$ and jump sizes $\Delta X(T_i)=Y_i$, where Y_i are independent and identically distributed random variables.

4. Application of Stoynov processes to general reflected surplus model.

In this part, we will consider a more general modification of the reflected surplus model and will propose a general formula for the probability of default in it.

Let us take the reflected version of the surplus process:

$$R(t) = U(t) + S(t).$$

This process models surplus of companies whose inherent business involves deterministic flow of expenses and incomes which arrive occasionally (discoveries, patents, sales). Pharmaceutical or petroleum companies are prime examples of such companies. Here $U(t)$ is a non-increasing and left-continuous function for which $U(0) = u > 0$ is the company's initial surplus, and $S(t) = \sum_{i=0}^{N(t)} Y_i$ where $Y_0 \equiv 0,$ is the aggregate income amount process. We consider this process in time interval $[0, \nu].$ We will say that there is a default for it in this interval, if $\exists 0 < t \le \nu : R(t) < 0.$

We define the function $\tilde{U}(t) = -U(t).$ In order not to have default (failure) the graphics of $S(t)$ should be above the graphics of $\tilde{U}(t) = -U(t).$ Also, we define $\tilde{U}^{-1}(y) = \sup\{t : \tilde{U}(t) \le y\}.$ This means that $\tilde{U}^{-1}(y)$ is right-continuous.

Here we will use the concept of stochastic process having Order Statistics (OS) property.

Let

$$F_\nu(x) = \begin{cases} 0, t < 0 \\ \dfrac{\Phi(x)}{\Phi(\nu)}, 0 \le x < \nu \\ 1, x \ge \nu \end{cases}$$

where $\nu > 0, \Phi(0) \ge 0, \Phi(\nu) > 0.$ So, $F_\nu(x)$ is a non-decreasing and right-continuous cumulative distribution function and $\Phi(\nu)$ is the corresponding cumulative intensity function. We define also $F_\nu^{-1}(u) = \inf\{t : F_\nu(t) \ge u\}.$

We say that the point process $X(t)$ with arrival times $T_i \xrightarrow{a.s.} +\infty$ follows OS property if, given that $\chi(0, \nu]$ is the number of the incomes arrived before the time $\nu,$ the conditional distribution $P(T_1, T_2, \ldots T_k \mid \chi(0, \nu] = k)$ of the times of the arrivals of the process $0 \le T_1 \le T_2 \le \cdots \le T_k$ in the interval $(0, \nu]$ co-insides with the distribution of the ordered statistics $X_{1k}, X_{2k}, \ldots X_{kk}$ of k independent and identically distributed random variables $X_1, X_2, \ldots X_k$ with distribution function $F_\nu(x).$

We will further use the following result due to Steck (1971):

Theorem 2 (Steck). Let $u_1, \ldots, u_k$ and $v_1, \ldots, v_k$ be such that $0 \le u_i < v_i \le 1, i = 1, \ldots, k.$ Then

$$P(\bigcap_{i=1}^{k}(u_i \le U_{ik} \le v_i)) = k! \det\left(\left(\tilde{\delta}_{m,l}^{(k)}\right)_{1 \le m,l \le k}\right) = \det\left(\left(\tilde{\rho}_{m,l}^{(k)}\right)_{1 \le m,l \le k}\right)$$

where U_{ik} are ordered statistics of independent uniformly on $[0,1]$ distributed random variables, $\det\left(\left(\tilde{\delta}_{m,l}^{(k)}\right)_{1 \le m,l \le k}\right)$ is the determinant of an $k \times k$ matrix with elements on the $m-$th row and $l-$th column defined as

$$\tilde{\delta}_{m,l}^{(j)} = \begin{cases} \dfrac{(v_m - u_l)_+^{l-m+1}}{(l-m+1)!}, l - m + 1 \ge 0 \\ 0, l - m + 1 < 0 \end{cases}$$

and

$$\tilde{\delta}_{m,l}^{(j)} = \binom{l}{l-m+1}(v_m - u_l)_+^{l-m+1}. \square$$

□

We make the following assumptions:

1. $S(t)$ is stepwise process with levels of the steps denoted by $X_i = \sum_{k=1}^{i} Y_k$. Here X_i can be depending one from another. The only restriction we impose is with probability one they to form strongly increasing sequence.

2. The times $T_1, T_2, \ldots, T_n, \ldots$ of jumps of $S(t)$ form a point process independent of the distribution of the claims.

3. $S(t)$ has Order Statistics (OS) property.

Then, if $0 \equiv x_0 < x_1 < \cdots < x_k < \infty$ is the realization of the sequence $0 < X_1 < \cdots < X_k$ with join cumulative distribution function $F(x_1, x_2, \ldots, x_k)$, we have the following theorem proposed by Ignatov, Kaishev and Stoynov which is a special case of a result of Dimitrova, Ignatov and Kaishev (2015) covering and extending previous ruin probability formulas due to Ignatov and Kaishev (2000, 2004, 2006).

Theorem 3 (Ignatov, Kaishev). Let for the process $R(t) = U(t) + S(t)$ conditions 1-3 hold. Let the times of arrival of the incomes (jumps of $S(t)$) are $T_1, T_2, \ldots, T_i$ and $\chi(0, v]$ is the number of the incomes arrived before the time v. Then, if $A(v)$ is the event of non-default till the time v, we have

$$P(A(v)) = \sum_{k=0}^{\infty} k! P(\chi(0, v] = k) \times$$
$$\times \int \ldots \int_{C_k} I_{\tilde{U}(v)}(x_k) \Delta_k((b_1, b_2, \ldots, b_k)) dF(x_1, x_2, \ldots, x_k),$$

where

$$I_a(b) = \begin{cases} 1, a \le b \\ 0, a > b. \end{cases}$$
$$C_k = \{(x_1, \ldots, x_k) : 0 < x_1 < \cdots < x_k < \infty\}$$
$$w_1 = \min(v, \tilde{U}^{-1}(x_0)), \ldots, w_k = \min(v, \tilde{U}^{-1}(x_{k-1})),$$
$$b_1 = F_v(w_1), \ldots, b_k = F_v(w_k)$$

and

$$\Delta_k((b_1, b_2, \ldots, b_k)) = \det \begin{pmatrix} \frac{b_1}{1!} & \frac{b_1^2}{2!} & \frac{b_1^k}{k!} \\ 1 & \frac{b_2}{1!} & \frac{b_2^{k-1}}{(k-1)!} \\ & & \\ 0 & 0 \quad 1 & \frac{b_k}{1!} \end{pmatrix}.$$

Theorem 4. Let $R(t) = U(t) + S(t)$ and $U(t) = -t + u, u > 0$ and the aggregate income amount process $S(t)$ is a $ST1(1, \beta)$ process with jump times $T_1, T_2, \ldots, T_i, \ldots$. Then, if $A(v)$ is the event of non-default till the time v, we have

$$P(A(v)) = \sum_{k=0}^{\infty} (\beta v)^k e^{-\beta v} \times$$
$$\times \int \ldots \int_{C_k} I_{\tilde{U}(v)}(x_k) \Delta_k((b_1, b_2, \ldots, b_k)) dF(x_1, x_2, \ldots, x_k),$$

where

$$I_a(b) = \begin{cases} 1, a \le b \\ 0, a > b. \end{cases}$$

$$C_k = \{(x_1, \ldots, x_k) : 0 < x_1 < \cdots < x_k < \infty\}$$

$$b_1 = \frac{\min(\nu, u)}{\nu}, \ldots, b_k = \frac{\min(\nu, u+k-1)}{\nu}$$

and

$$\Delta_k((b_1, b_2, \ldots, b_k)) = \det \begin{pmatrix} \frac{b_1}{1!} & \frac{b_1^2}{2!} & \frac{b_1^k}{k!} \\ 1 & \frac{b_2}{1!} & \frac{b_2^{k-1}}{(k-1)!} \\ 0 & 0 & 1 \quad \frac{b_k}{1!} \end{pmatrix}.$$

Proof: We apply Theorem 3. We have $\tilde{U}(t) = -U(t) = t - u.$ For the steps of the process $S(t)$ we have $X_0 = x_0 = 0, \ldots, X_k = x_k = k, \ldots.$ Also, we have

$$w_1 = \min(\nu, \tilde{U}^{-1}(x_0)) = \min(\nu, u), \ldots,$$

$$w_k = \min(\nu, \tilde{U}^{-1}(x_{k-1})) = \min(\nu, u + k - 1).$$

We have also

$\tau_i = T_i - T_{i-1} \in ST1(0, \beta) \equiv Exp(\beta), i = 0,1, \ldots, T_0 = 0.$ This means that the process is Poisson and hence:

1. Satisfies the Ordered Statistics Property.
2. For this process

$$F_\nu(x) = \begin{cases} 0, t < 0 \\ \frac{x}{\nu}, 0 \le x < \nu \\ 1, x \ge \nu. \end{cases}$$

We have also

$$P(\chi(0, v] = k) = \frac{(\beta\nu)^k}{k!} e^{-\beta\nu}, k = 0,1, \cdots$$

So, by Theorem 3, the theorem is proved. □

Theorem 5. Let $R(t) = U(t) + S(t)$ and $U(t)$ be a non-increasing and left-continuous function for which $U(0) = u > 0$ and the aggregate income amount process $S(t)$ is a $ST1(1, \beta)$ process with jump times $T_1, T_2, \ldots, T_i, \ldots$ and $\chi(0, \nu]$ is the number of the incomes arrived before the time ν. Then, if $A(\nu)$ is the event of non-default till the time ν, we have

$$P(A(\nu)) = \sum_{k=0}^{\infty} (\beta\nu)^k e^{-\beta\nu} \times$$

$$\int \ldots \int_{C_k} I_{\tilde{U}(\nu)}(x_k) \Delta_k((b_1, b_2, \ldots, b_k)) dF(x_1, x_2, \ldots, x_k),$$

where

$$I_a(b) = \begin{cases} 1, a \le b \\ 0, a > b. \end{cases}$$

$$C_k = \{(x_1,\ldots,x_k) : 0 < x_1 < \cdots < x_k < \infty\}$$

$$b_1 = \frac{\min(\nu, \tilde{U}^{-1}(x_0))}{\nu}, \ldots, b_k = \frac{\min(\nu, \tilde{U}^{-1}(x_{k-1}))}{\nu}$$

and

$$\Delta_k((b_1,b_2,\ldots,b_k)) = \det\begin{pmatrix} \frac{b_1}{1!} & \frac{b_1^2}{2!} & \frac{b_1^k}{k!} \\ 1 & \frac{b_2}{1!} & \frac{b_2^{k-1}}{(k-1)!} \\ 0 & 0 & 1 \quad \frac{b_k}{1!} \end{pmatrix}.$$

Proof: We apply Theorem 3. We have

$\tau_i = T_i - T_{i-1} \in ST1(0,\beta) \equiv Exp(\beta), i = 0,1,\ldots, T_0 = 0.$

This means that the process is Poisson and hence:

1. Satisfies the Ordered Statistics Property.
2. For this process

$$F_\nu(x) = \begin{cases} 0, t < 0 \\ \frac{x}{\nu}, 0 \le x < \nu \\ 1, x \ge \nu. \end{cases}$$

We have also

$$P(\chi(0,v] = k) = \frac{(\beta\nu)^k}{k!} e^{-\beta\nu}, k = 0,1,\cdots$$

So, by Theorem 3, the theorem is proved. □

Theorem 6. Let $R(t) = U(t) + S(t)$ and $U(t)$ be a non-increasing and left-continuous function for which $U(0) = u > 0.$ Let the aggregate income amount process $S(t)$ is a degenerated switch time process of first kind $ST1(n,\beta)$ with $D^n = s, s = 1,\ldots,n-1$ having jump times $T_1, T_2, \ldots, T_i, \ldots.$ Then, if $A(\nu)$ is the event of non-default till the time $\nu,$ we have:

$$P(A(v)) = \sum_{k=0}^{\infty} (\beta v)^{sk} e^{-\beta v} \times$$

$$\times (\int \dots \int_{C_k} I_{\tilde{U}(v)}(x_k) \Delta_{sk}((b_1, b_1, b_2, b_2, \dots, b_k, b_k)) dF(x_1, x_2, \dots, x_k)) +$$

$$+ \sum_{k=0}^{\infty} (\beta v)^{sk+1} e^{-\beta v} \times$$

$$\times (\int \dots \int_{C_k} I_{\tilde{U}(v)}(x_k) \Delta_{sk+1}((b_1, b_1, b_2, b_2, \dots, b_k, b_k, 1)) dF(x_1, x_2, \dots, x_k)) +$$

$$+ \dots +$$

$$+ \sum_{k=0}^{\infty} (\beta v)^{sk+s-1} e^{-\beta v} \times$$

$$\times (\int \dots \int_{C_k} I_{\tilde{U}(v)}(x_k) \Delta_{sk+s-1}((b_1, b_1, b_2, b_2, \dots, b_k, b_k, 1, \dots, 1)) \times$$

$$\times dF(x_1, x_2, \dots, x_k),$$

where

$$I_a(b) = \begin{cases} 1, a \le b \\ 0, a > b, \end{cases}$$

$$C_k = \{(x_1, \dots, x_k) : 0 < x_1 < \dots < x_k < \infty\}$$

$$b_1 = \frac{\min(v, \tilde{U}^{-1}(x_0))}{v}, \dots, b_k = \frac{\min(v, \tilde{U}^{-1}(x_{k-1}))}{v}$$

and b_i is repeated s times as argument in Δ_{sk} and

$$\Delta_k((b_1, b_2, \dots, b_k)) = \det \begin{pmatrix} \frac{b_1}{1!} & \frac{b_1^2}{2!} & \frac{b_1^k}{k!} \\ 1 & \frac{b_2}{1!} & \frac{b_2^{k-1}}{(k-1)!} \\ & & \\ 0 & 0 & 1 \quad \frac{b_k}{1!} \end{pmatrix}$$

.

Proof: We apply Theorem 5. We have $\tau_i = T_i - T_{i-1} \in Erlang(s, \beta), i = 0,1, \dots, T_0 = 0.$ This process does not satisfy the Ordered Statistics Property. We consider the corresponding Poisson process with jumps $Z_i, i = 0,1, \dots,$ from which the degenerated switch time process can be obtained by returns to zero in times $Z_i, i = 1,2, \dots, (s-1),$ returns to level one at times $Z_{i'}, i = s+1, s+2, \dots, 2s-1,$ and so on, returns to level k at times $Z_{i'}, i = sk+1, sk+2, \dots, (s+1)k-1$ and so on.

We have for the probability of non-default:

$$P(S(t) \ge \tilde{U}(t) \mid 0 \le t \le \nu, \chi(0,\nu] = k) =$$

$$= P\left(\bigcap_{i=1}^{k}\{T_i \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\}\right) =$$

$$= P(\bigcap_{i=1}^{k}(\{Z_{s(i-1)+1} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\} \cap \ldots \cap \{Z_{si} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\}) \cap$$

$$\cap \{Z_{sk+1} > \nu\}) +$$

$$+ P(\bigcap_{i=1}^{k}(\{Z_{s(i-1)+1} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\} \cap \ldots \cap \{Z_{si} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\}) \cap$$

$$\cap \{Z_{sk+1} > \nu\} + \cap\{Z_{sk+2} > \nu\}) +$$

$$+ \cdots +$$

$$+ P(\bigcap_{i=1}^{k}(\{Z_{s(i-1)+1} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\} \cap \ldots \cap \{Z_{si} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\}) \cap$$

$$\cap \{Z_{sk+s-1} > \nu\} + \cap\{Z_{sk+s} > \nu\}) =$$

.

$$= \int_{C_k} \ldots \int I_{\tilde{U}(\nu)}(x_k) \times$$

$$\times P(\bigcap_{i=1}^{k}(\{Z_{(s-1)i+1} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\} \cap \ldots \cap$$

$$\cap \{Z_{si} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\}) \cap \{Z_{sk+1} > \nu\}) \cap \{Z_{sk+1} > \nu\})dF(x_1, x_2, \ldots, x_k) +$$

$$+ \int_{C_k} \ldots \int I_{\tilde{U}(\nu)}(x_k) \times$$

$$\times P(\bigcap_{i=1}^{k}(\{Z_{(s-1)i+1} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\} \cap \ldots \cap \{Z_{si} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\}) \cap$$

$$\cap \{Z_{sk+1} < \nu\} \cap \{Z_{sk+2} > \nu\})dF(x_1, x_2, \ldots, x_k) +$$

$$+ \cdots + \int_{C_k} \ldots \int I_{\tilde{U}(\nu)}(x_k) \times$$

$$\times P\bigcap_{i=1}^{k}(\{Z_{(s-1)i+1} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\} \cap \ldots \cap \{Z_{si} \le \min(\nu, \tilde{U}^{-1}(X_{i-1}))\}) \cap$$

$$\cap \{Z_{ks+s-1} < \nu\} \cap \{Z_{ks+s} > \nu\}dF(x_1, x_2, \ldots, x_k) =$$

$$= \int_{C_k} \ldots \int P\left(\bigcap_{i=1}^{k}\left(\{U^{(0,\nu]}_{(s-1)i+1,sk} \le b_i\} \cap \ldots \cap \{U^{(0,\nu]}_{si,sk} \le b_i\}\right)\right)dF(x_1, x_2, \ldots, x_k) +$$

$$+ \int_{C_k} \ldots \int P(\bigcap_{i=1}^{k}\left(\{U^{(0,\nu]}_{(s-1)i+1,sk+1} \le b_i\} \cap \ldots \cap \{U^{(0,\nu]}_{si,sk+1} \le b_i\}\right) \cap$$

$$\cap \{U^{(0,\nu]}_{sk+1,sk+1} \le 1\})dF(x_1, x_2, \ldots, x_k) +$$

$$+ \cdots +$$

$$+ \int_{C_k} \ldots \int P(\bigcap_{i=1}^{k}\left(\{U^{(0,\nu]}_{(s-1)i+1,sk+s-1} \le b_i\} \cap \ldots \cap \{U^{(0,\nu]}_{si,sk+s-1} \le b_i\}\right) \cap$$

$$\cap \{U^{(0,\nu]}_{sk+s-1,sk+s-1} \le 1\})dF(x_1, x_2, \ldots, x_k).$$

where

$$I_a(b) = \begin{cases} 1, a \le b \\ 0, a > b, \end{cases}$$

$$C_k = \{(x_1, \ldots, x_k) : 0 < x_1 < \cdots < x_k < \infty\}$$

$$b_i = F_\nu(\min(\nu, \widetilde{U}^{-1}(x_{i-1})))$$

We have also:

$$P\left(\bigcap_{i=1}^{k}\left(\{U^{(0,\nu]}_{(s-1)i+1,sk} \le \min(\nu,\widetilde{U}^{-1}(x_{i-1}))\} \cap \ldots \cap \{U^{(0,\nu]}_{si,sk} \le \min(\nu,\widetilde{U}^{-1}(x_{i-1}))\}\right)\right) =$$

$$= (sk)!\Delta_{sk}((b_1,b_1,\cdots,b_1,b_2,b_2,\ldots,b_2,b_k,b_k,\ldots,b_k))$$

$$P(\bigcap_{i=1}^{k}(\{U^{(0,\nu]}_{\substack{s \\ s(i-1)+1,sk+1}} \le \min(\nu,\widetilde{U}^{-1}(x_{i-1}))\} \cap \ldots \cap$$

$$\cap \{U^{(0,\nu]}_{si,sk+1} \le \min(\nu,\widetilde{U}^{-1}(x_{i-1}))\}) \cap \{U^{(0,\nu]}_{sk+1,sk+1} \le 1\}) =$$

$$= (sk+1)!\Delta_{sk+1}((b_1,b_1,\cdots,b_1,b_2,b_2,\ldots,b_2,b_k,b_k,\ldots,b_k,1))$$

$$P\left(\bigcap_{i=1}^{k}\left(\{U^{(0,\nu]}_{(s-1)i+1,sk+s-1} \le b_i\} \cap \ldots \cap \{U^{(0,\nu]}_{si,sk+s-1} \le b_i\}\right) \cap \{U^{(0,\nu]}_{sk+s-1,sk+s-1} \le 1\}\right) =$$

$$= (sk+s-1)!\Delta_{sk+s-1}((b_1,b_1,\cdots,b_1,b_2,b_2,\ldots,b_2,b_k,b_k,\ldots,b_k,1,1,\ldots,1))$$

where

$$b_1 = \frac{\min(\nu,\widetilde{U}^{-1}(x_0))}{\nu},\ldots,b_k = \frac{\min(\nu,\widetilde{U}^{-1}(x_{k-1}))}{\nu}$$

and for example

$$\Delta_{sk}((b_1,b_1,\ldots,b_1,b_2,b_2,\ldots,b_2,b_k,b_k,\ldots b_k)) = \det\begin{pmatrix} \frac{b_1}{1!}\frac{b_1^2}{2!} & \frac{b_1^{sk}}{(sk)!} \\ 1\frac{b_1}{1!} & \frac{b_1^{sk-1}}{(sk-1)!} \\ & \\ 01 & \frac{b_1^{(s-1)k}}{((s-1)k)!} \\ 01 & \frac{b_2^{(s-1)k-1}}{((s-1)k-1)!} \\ & \\ 00 & 1\frac{b_{sk}}{1!}\frac{b_{sk}^2}{2!} \\ 00 & 01 \quad \frac{b_{sk}}{1!} \end{pmatrix}.$$

□

5. Conclusion.

Switch time distributions presented in the article posses some suitable properties for modeling more complicated switch time structures in additive processes and their generalizations.

The present work may be extended for typical (not degenerated) ST processes as well as by studying other choices of G^k.

For example, we may choose $G^k \in NB(k, e^{-\beta})$. In this case, $\xi \mid D^n \equiv NB(D^n, e^{-\beta})$ and we obtain a distribution which we will call $ST2(n,\beta)$ distribution.

As another example we may consider $G^k \equiv \delta_k(x)$ - random variable which takes value k with probability one. Then $\xi \equiv D^n \in D^n(\beta)$. In this case, we say that random variable ξ has $ST3(n,\beta)$ distribution and denote $\xi \in ST3(n,\beta)$.

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Additive processes – characterization and possible generalizations

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Abstract.
Genaralizations of additive processes are considered and corresponding parameterization is proposed.
Key words: additive processes; parameterization
MSC 2010: 60G51, 97K60

1. Introduction – definition of additive processes.

With a given filtered probability space (Ω, F, F_t, P) satisfying the usual conditions, an (one or d-dimensional) additive process is defined as a stochastic process $\{X(t), t \geq 0\}$ which is càdlàg and satisfies the following conditions:

1. $X(0) = 0;$

2. The process has independent increments, i. e. for every sequence of numbers

$$0 < t_1 < t_2 < \cdots < t_n$$

the random variables

$$X(t_1) - X(0), X(t_2) - X(t_1), \ldots, X(t_n) - X(t_{n-1})$$

are independent;

3. The process is stochastically continuous (continuous in probability), i. e.

$$\lim_{t \to s} X(t) = X(s),$$

where the limit is taken by probability.

The additive processes are introduced by Lévy (1937, 1992). Their properties are studied in Sato (1999).

2. Sato theorem and parameterization.

In Sato (1999), the following theorem is presented:

Theorem (Sato) Let $\{X(t), t \geq 0\}$ be an additive process with values in R^d. Then:

1. For every $t \geq 0$ the random variable $X(t)$ has infinitely divisible distribution.

2. The distribution of $\{X(t), t \geq 0\}$ is uniquely identified by its point characteristics $\{(A(t), \mu(t), \Gamma(t)), t \geq 0\}$, which are related to the characteristic function in the following way:

$$Ee^{iuX(t)} = e^{\psi(t,u)}$$

and

$$\psi(t,u) = -\frac{1}{2} uA(t)u + iu\Gamma(t) + \int_{R^d} \mu(t, dx)(e^{iux} - 1 - iux1_{\{|x| \leq 1\}}).$$

The point characteristics of the additive process satisfy the properties:

2.1. For every $t \geq 0$ $A(t)$ is positive definite matrix with dimension $d \times d$, $\Gamma(t)$ is a function with values which are vectors in R^d and $\mu(t, dx)$ is a positive measure in R^d, satisfying the conditions $\mu(t, \{0\}) = 0$ and $\int_{R^d} \min(|x|^2, 1)\mu(t, dx) < \infty.$

2.2. $A(0) = 0, \mu(0, dx) = 0, \Gamma(0) = 0$ and for all $t \geq s \geq 0$ the matrix $A(t) - A(s)$ is a positive definite matrix with dimension $d \times d$ and $\mu(s, B) \leq \mu(t, B)$ for all measurable sets $B \in \mathrm{B}(R^d).$

2.3. If $s \to t,$ then $A(s) \to A(t), \Gamma(s) \to \Gamma(t), \mu(s, B) \to \mu(t, B)$ for all measurable sets $B \in \mathrm{B}(R^d),$ for which $B \subset \{x : |x| \geq \varepsilon\}$ for some $\varepsilon > 0.$

Conversely, for the family triples $\{(A(t),\mu(t),\Gamma(t)),t\geq 0\}$, which satisfies 2.1., 2.2. and 2.3. there is an additive process $\{X(t),t\geq 0\}$ with the corresponding point characteristics.

Important special cases of the additive processes are the processes for which there exists the following parametric representation of the point characteristics:

1. $A(t)=\int_0^t \sigma^2(s)ds,$ where for every $t\geq 0$ the matrix $\sigma(t)$ is a real matrix with dimension $d\times n$ for which $\int_0^T \sigma^2(t)dt<\infty$ for fixed $T>0$ such that $\sigma(t)$ is defined in the interval $[0,T].$

2. $\mu(t,B)=\int_0^t \nu(s,B)ds$ for all measurable sets $B\in \mathrm{B}(R^d),$ where $\{\nu(t),t\in[0,T]\}$ is a family of Lévy measures satisfying the condition $\int_0^T\int_{R^d}\min(|x|^2,1)\nu(t,dx)dt<\infty.$

3. $\Gamma(t)=\int_0^t \gamma(s)ds,$ where $\gamma:[0,T]\to R$ is a deterministic function with finite variation.

For the triple $(\sigma^2(t),\nu(t),\gamma(t))$ we say that it defines the local characteristics of the additive process. The additive processes with local characteristics are semimartingales.

3. Possible generalizations.

There are different possibilities for generalization of the additive processes.

One way of generalization is to introduce jumps in deterministic moments, as proposed by Kallsen (1998). In this way, the process is not already stochastically continuous and with stationary increments. To characterize such kind of processes, to the point and local characteristics there is a need to add new characteristics identifying the position and the size of these deterministic-time jumps.

The point characteristics become

$$\{(\Theta,K(t),A(t),\mu(t),\Gamma(t)),t\geq 0\},$$

where Θ is a discrete set giving the times of the jumps and $K(t)$ is conditional distribution of the jumps for which

$$K(t,G)=\begin{cases}\mu(t,G)+\varepsilon_0(G)(1-\mu(t,R)),t\in\Theta\\ 0,t\notin\Theta.\end{cases}$$

Here $\varepsilon_0(G)$ is the Dirac measure in the point $0.$

In the case when local characteristics exist we have

$$\{(\Theta,K(t),A(t)=\int_0^t\sigma^2(s)ds,$$

$$\mu(t,G)=\int_0^t\nu(s,G)ds+\sum_{s\in\Theta\cap[0,t]}\mu(s,G)=\int_0^t\nu(s,G)ds+$$

$$+\sum_{s\in\Theta\cap[0,t]}K(s,G\setminus\{0\}),$$

$$\Gamma(t)=\int_0^t\gamma(s)ds+\sum_{s\in\Theta\cap[0,t]}\Delta\Gamma(s)=\int_0^t\gamma(s)ds+$$

$$+\sum_{s\in\Theta\cap[0,t]}\int xK(s,dx)),t\geq 0\},$$

and the local characteristics are:

$$\{(\Theta,K(t),\sigma^2(t),\nu(t),\gamma(t)),t\geq 0\}.$$

A next step of generalization is to allow stochastic characteristics- drift, volatility and jump intensity. The corresponding processes are considered for example in Grigelionis (1973).

In this case, the point characteristics of the process are

$$\{(\Theta, K(\omega,t), A(\omega,t), \mu(\omega,t), \Gamma(\omega,t)), t \geq 0\}$$

and the local characteristics (when they exist) are

$$\{(\Theta, K(\omega,t), \sigma^2(\omega,t), \nu(\omega,t), \gamma(\omega,t)), t \geq 0\}.$$

The obtained characterization allows to specify also some specific jumps in random times and to characterize them separately from the remaining jumps of the process. In this case, the point characteristics can be presented as:

$$\{(\Theta(\omega,t), K(\omega,t), A(\omega,t), \mu(\omega,t), \Gamma(\omega,t)), t \geq 0\}$$

where the random times of the specific jumps are represented by the point process $\{\Theta(\omega,t), t \geq 0\}$.

It is also possible to combine specific jumps in specific random times with jumps in deterministic moments. In this case, the parameters of the process (in the case when local characteristics exist) are:

$$\{(\Theta_1, \Theta_2(\omega,t), K_1(\omega,t), K_2(\omega,t), A(\omega,t) = \int_0^t \sigma^2(\omega,s)ds,$$

$$\mu(\omega,t,G) = \int_0^t \nu(\omega,s,G)ds + \sum_{s \in \Theta_1 \cap [0,t]} K_1(\omega,s,G \setminus \{0\}) +$$

$$+ \sum_{\theta_i < t} K_2(\omega,\theta_i, G \setminus \{0\}),$$

$$\Gamma(t) = \int_0^t \gamma(s)ds + \sum_{s \in \Theta_1 \cap [0,t]} \int xK_1(\omega,s,dx) +$$

$$+ \sum_{\theta_i < t} \int xK_2(\omega,\theta_i,dx)), t \geq 0\}.$$

Here $K_1(\omega,t)$ and $K_2(\omega,t)$ are the conditional distributions of the jumps in deterministic and specific random times correspondingly.

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